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UNITED STATES DEPARTMENT OF COMMERCE

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U. S. DEPARTMENT OF COMMERCE

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BIBLIOGRAPHY OF Technical Reports

January 1951

INDUSTRY BENEFITS FROM NAVAL RESEARCH

The Naval Research Laboratory of the Office of Naval Research helps "to provide for the common defense" in two ways. First, it carries on applied research in the physical sciences to increase the combat effectiveness of the Fleet. Second, and on a longer-range basis, it does basic research in anticipation of future requirements of the Navy.

Much of the new scientific information gained as a result of this program is unclassified and is of interest to industry as well as to the Navy. One means of making this information generally available to industry is through the facilities of the Office of Technical Services of the Department of Commerce.

Some significant results of this program that have been made available in this manner during the past year are briefly described in the following paragraphs. Individual reports are identified by "PB" number, by which they may be ordered from O.T.S.

Chemistry

Deterioration caused by fungi in tropic environments has stimulated efforts toward preventing this destruction either by careful packaging and dehumidifying procedures or by utilizing fungicidal materials applied on or into the material being protected. The latter method is desirable since it provides for protection after the equipment is unpackaged and is in use. As part of its research in chemistry, NRL has undertaken a systematic examination of organic substances so that fungicidal activity may be correlated with chemical structure. In the initial effort toward establishing correlation of geometric configuration with fungicidity, the cis-trans isomers of the di(bromoacetate) of 1,4-cyclohexanediol were synthetized and separated (PB 101141, Vol. 14, p. 170). Early in the work on fungicides, the α-bromoacetamides were found to be extremely toxic for fungi. In order to investigate systematically the fungicidal activity of the α-halo amides, the synthesis of similar α, α-dichloro-acetamides was undertaken. Twenty-four of these compounds, 21 of which are new and not previously described in the literature, were synthesized and their properties ascertained. (PB 110326, Vol. 14, p. 111).

A large proportion of exposed metal used by the U. S. Navy is protected by organic protective coatings familiarly known as paint. Such coatings are not perfect insulators against corrosive attack from the weather and sea and consequently require continual and periodic maintenance and renewal. To obtain a better understanding of the role of paint pigments in the protection of iron and steel, electrochemical studies were made of selected pigments and the mechanism by which they protect steel in the presence of electrolytes. (PB 100791, Vol. 14. p. 78).

As another investigation in the field of chemistry, a laboratory method was desired for the evaluation of the ignition quality of small samples of Diesel fuels without having to use a cetane-rating engine. A study was made of the Jentsch fuel tester for this purpose. A number of widely different fuels were tested by this method and it was found that a qualitative but not quantitative relationship existed between the Jentsch comparison number and the cetane number (PB 110340, Vol. 14, p. 130).

In the field of fluorine chemistry, spectroscopic properties of fluorocarbons and fluorinated hydrocarbons have been studied. Infrared spectra of 40 fluorinated compounds and Raman spectra of 25 of these compounds have been determined. In addition, a partial assignment of fundamental frequencies for nine fluorinated aromatic hydrocarbons was proposed (PB 110324, Vol. 14, p. 116).

Electricity

The Navy, having extensively used direct current for ship's service and propulsion power plants over a long period of years, has always been vitally interested in the question of transient performance of d-c rotating machinery and the effects of transients on system operation. Of special interest has been that phase of system study which deals with fault current analysis and the application of protective devices to the power plant, a study which has taken on increased importance as the electrical loads on naval vessels have increased. Comparisons of oscillographic data with theoretical observations on the transient behavior of d-c machines indicate that the theoretical relations do not have the accuracy necessary for optimum design of shipboard systems because they do not adequately reflect the influence of initial conditions of load, voltage, and speed on peak currents. Consequently, more fundamental knowledge is being sought of the internal phenomena of rotating machinery (PB 110334, Vol. 14, p. 125).

Fault study is also important for aircraft electrical systems, where arcing faults have been demonstrated to cause severe damage to the plane structure under laboratory conditions. An analysis of approximately 2300 faults established in a laboratory installation of a simulated single-generator 30-volt d.c. aircraft elec-

trical system showed that approximately 77 percent of the faults established were of the intermittent-type. It was also shown that the contact resistance at the point of the fault as determined by the area of the contact and the arc resistance, if any, primarily determine the fault current magnitude in a particular system (PB 110438, Vol. 14, p. 159).

More stringent requirements for stabilized platforms for radar antennas demands investigation of new types and methods of performing the control functions. In connection with this investigation, consideration was given to the magnetic amplifier, in which amplification is secured through the use of a saturable reactor. A simple graphical method for the design of such reactors has been developed which provides a degree of accuracy sufficient for many applications and has been used successfully to design both series- and parallel-connected saturable reactors with split Hypersil cores (PB 110337, Vol. 14, p. 121).

Effective operation of military aircraft requires instrumentation of engine performance. The thrust of a turbo-jet engine is the primary parameter indicating engine performance, but this parameter is not directly measurable during flight. An airborne analog computer has been designed, constructed, and evaluated at NRL for continuous solution of gross thrust (PB 110339, Vol. 14, p. 189).

Mechanics

As a part of an overall investigation of shock and vibration, a procedure for determining the performance of shock mounts has been developed, using standard Navy shock machines. The criterion of performance is the shock spectrum of the motion of the rigid load on the mount, since this is related to the likelihood of damage to almost all equipments and since prevention of damage is the function of a shock mount (PB 101170, Vol. 14, p. 241).

Metallurgy

With the development of improved commercial processes for the production of high purity titanium, it has become necessary to devise and to refine analytical techniques for the determination of all elements whose presence might affect the physical properties of this metal. Modified vacuum fusion techniques have been developed for the determination of oxygen in titanium which yields analyses of satisfactory accuracy and precision and provides a foundation for further oxygen-titanium investigations (PB 100296, Vol. 13, p. 280).

In foundry work, mold washes, which are applied to the surfaces of a cavity in sand molds are sometimes necessary to permit a satisfactory casting to be made. A mold wash containing silica flour has been developed for general use and one containing graphite for use with cast-iron molds. (PB 100515, Vol. 14, p. 34).

Optics

In experiments involving light detection, a need often arises for an a-c instrument to utilize readily the sensitivity of photomultiplier tubes. A single panel for the operating controls, and portability of the apparatus are desirable features, especially in photometric work. These design features were incorporated in an apparatus developed for general laboratory work which gives stable operation on a-c lines (PB 99615, Vol. 13, p. 115).

Voltage regulator tubes, which make use of the corona discharge between coaxial cylinders, offers a practical means for stabilizing voltages above several hundred volts at currents below one milliampere in a manner analogous to the stabilization of low voltages by the familiar glow-tube regulator. Circuit design relationships have been established which permit the fitting of particular corona regulator tube characteristics to specific load-current and other requirements (PB 110437, Vol. 14, p. 127).

Radio

The efficiency with which a frequency band can be used in a multichannel system is partially determined by the off-channel rejection that can be obtained at the receiver. A discriminating second detector has been developed that reduces the frequency range over which a receiver will respond to pulse-modulated signals, thereby providing improved off-channel rejection (PB 101171, Vol. 14, p. 177).

In the field of frequency and time determination it is often necessary to determine the frequency difference between two "standard" oscillators. A technique has been developed, however, which performs this task by comparing the frequency of a base standard and recording the difference directly in $\pm$ parts in 10^6,10^7,10^8, or 10^9 without necessitating the offsetting of either frequency. This technique indicates by direct reading or recording, the immediate or long-time frequency variation as related to a standard oscillator to a few parts in 10^9 (PB 101172, Vol. 14, p. 186).

In the field of microwave instrumentation, a system has been developed for frequency stabilization of a reflex klystron that is simple to operate and is capable of amplitude and frequency stabilities which are adequate for measurement needs for the majority of microwave networks (PB 110434, Vol. 14, p. 126). Standing-wave methods of making impedance measurements in the microwave region have been investigated to find means of increasing operating convenience and to reduce the time required in taking readings. Both manually operated and semi-automatic instruments have been evaluated (PB 110333, Vol. 14, p. 119).

Automatic recording of antenna radiation patterns by equipment possessing mechanical inertia is limited in speed and subject to misuse when these patterns are sharp or contain nulls. To meet this problem, a recorder has been developed which eliminates mechanical inertias (PB 100797, Vol. 14, p. 62).

Radio laboratories require shielded rooms so that radio-frequency measurements can be made to a high degree of precision. Although they have been used for many years, the basic principles are not very well-know The principal design and constructional defects of shielded rooms were analyzed and common methods for measuring shielded-room performance described and criticized. A more satisfactory method for locating shielded-room defects was also evolved (PB 100753, Vol. 14, p. 46).

In connection with upper-atmosphere research, a low-voltage X-ray tube was developed to generate and transmit radiation at wavelengths longer than one angstrom. Preliminary performance tests indicate transmission of radiation in the region of 12 angstroms and shorter wavelengths, and in the ultraviolet (PB 110130, Vol. 14, p. 127).

Submitted by: Charles DeVore
Assistant Technical Information Officer
Naval Research Laboratory

APPAREL

ELECTRICALLY HEATED FLYING SUIT, ONE-PIECE, by W. C. Walker. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Jun 1950. 16p photos, tables Mi $1.75, Ph $2.50. PB 101997

1. Suits, Flying - Electrically heated 2. G 1 (Electrically heated flying suit) 3. AAF TSEAA MR 666-5D

HELMET FLYING INTEGRATED WIRING, by W. L. Moore. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Jun 1948. 24p photos Mi $2.00, Ph $3.75. PB 101993

1. Helmets, Flying - Wiring 2. Helmets, Flying - Thermal tests 3. AAF TSEAA MR 666-17A.

IMPACT EFFECT ON TWO TYPES OF PROTECTIVE HELMET, by Oliver T. Strand. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. May 1950. 22p photos, diagrs, graphs, tables Mi $2.00, Ph $3.75. PB 101702

Tests made to determine the effect of impact upon two types of protective helmet are described. Three impact-shapes were used at two impact velocities. Four different positions on each helmet were tested. The acceleration of the head and deceleration of the impact producing pendulum were measured and recorded. The two helmets tested were the United States Air Force P-1 and the Protection, Inc. Toptex. It is concluded that both helmets offer about the same protection against penetration and absorb equal amounts of energy. The P-1 helmet is better with respect to peak acceleration and distribution of the blow. The Protection, Inc. helmet is better with respect to displacement of the head during the blow, minimum tendency to "bottomout" against the head, and uniform protection over all areas. Drawings, graphs, photographs are included, bibliography attached. AAF TR 6020.

OPERATIONAL SUITABILITY TEST OF HELMET - FLYING, HEAVY, INTEGRATED HEADSET, by James E. Colburn. U. S. Air Proving Ground, Eglin Air Force Base, Fla. May 1949. 18p photos Mi $1.75, Ph $2.50. PB 101549

1. Helmets, Flying - Tests 2. APGC Proj 34854-5.

THERMAL INSULATION AND COMPRESSION CHARACTERISTICS OF RAYON INTERCEL BATTS, by Franz G. Rinecker. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1950. 7p graph, tables Mi $1.25, Ph $1.25. PB 101994

1. Flying suits - Insulation 2. AAF TSEAA MR 666-23M.

WIND BLAST PROTECTIVE VISOR ASSEMBLIES FOR USE WITH P-1 HELMETS AND A-13-A OXYGEN MASKS, by C. F. Simmons. U.S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Sep 1950. 30p photos, graphs Mi $2.00, Ph $3.75. PB 102011

1. Helmets, Flying - Visors 2. Respirators, Oxygen generating - Visors 3. P-1 (Helmet) 4. A-13-A (Oxygen mask) 5. AAF TR 6037.

CHEMICAL AND ALLIED PRODUCTS

Drugs and Pharmaceuticals

INSTRUCTIONS FOR THE MANUFACTURE OF PHARMACEUTICALS. I. G. Farbenindustrie A. G., Wuppertal, Ger. 1943. 15f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102264

1. Pharmaceuticals - Preparation - Germany 2. Micro BIOS FD 4638/47, Frames 1-14.

Abstract available as PB 102264s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 116 appx. 7.

MANUFACTURE OF ASPIRIN (ACETYL-SALICYLIC ACID). I. G. Farbenindustrie A. G., Höchst, Ger. Jun 1947. 19f drawings (Text in German and English) Mi $1.75, Enl Pr $3.75. PB 101914

1. Aspirin - Production - Germany 2. Micro BIOS FD 1420/49, Frames 1-7+11.

Abstract available as PB 101941s. 1p. Mi $1.25, Ph $1.25.

MANUFACTURE OF "SURFEN" AND "CONGASIN". I. G. Farbenindustrie A. G., Höchst, Ger. 1946. 19f drawing Mi $1.75, Enl Pr $3.75. PB 101913

1. Surfen (Trade name) 2. Congasin (Trade name) 3. Antiseptics - Germany 4. Micro BIOS FD 1409/49, Frames 1-7+9.

Abstract available as PB 101913s. 1p. Mi $1.25, Ph $1.25.

Dyes

AZO LAKES. PAPERS H1-H8 READ AT THE 11TH AKO MEETING, WOLFEN. I. G. Farbenindustrie A.G., Wolfen, Ger. 1937. 29f photos (Text in German) Mi $2.00, Enl Pr $5.00. PB 101894

1. Dyes, Azo - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 3181/48, Frames unnumbered.

Abstract available as PB 101894s. 2p. Mi $1.25, Ph $1.25. See also PB 101891-101893, 101895.

DISCUSSIONS ON PAPERS READ AT THE 13TH SCIENTIFIC AZO COMMISSION MEETING HELD ON 3.11.38. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938. 20f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101922

1. Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 303/50, Frames unnumbered.

Abstract available as PB 101922s. 1p. Mi $1.25, Ph $1.25. For papers see PB 101887-101889, 101901-101921, 101923-101926.

DISCUSSIONS ON THE REPORTS READ AT THE 12TH AKO MEETING ON DYESTUFFS. I. G. Farbenindustrie A. G., Leverkusen, Ger. Dec 1937. 23f (Text in German) Mi $2.00, Enl Pr $5.00. PB 101900

1. Dyes, Azo - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 258/50, Frames unnumbered.

Abstract available as PB 101900s. 1p. Mi $1.25, Ph $1.25. For papers read at the meeting see PB 101896-PB 101899.

MANUFACTURING PROCESSES FOR VARIOUS DYESTUFFS AND INTERMEDIATES, AND DRAWINGS OF EQUIPMENT. I. G. Farbenindustrie A.G., Leverkusen, Ger. 1913-1947. 200f drawings (Text in German) Mi $7.00, Enl Pr $26.25. PB 102210

1. Dyes, Alizarin - Manufacture - Germany 2. Dyes, Azo - Manufacture - Germany 3. Dyes and dyeing - Intermediates - Manufacture - Germany 4. Micro BIOS FD 4637/47, Frames 1-148.

Abstract available as PB 102210s. 3p. Mi $1.25, Ph $1.25.

NAPHTHOL AS DYESTUFFS. PAPERS J1-J2 READ AT THE 11TH AKO MEETING, WOLFEN. I. G. Farbenindustrie A. G., Wolfen, Ger. 1937. 31f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101895

1. Dyes, Naphthol AS - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 3182/48, Frames unnumbered.

Abstract available as PB 101895s. 2p. Mi $1.25, Ph $1.25. See also PB 101891-101894.

REPORTS ON DYESTUFFS FOR MIXED FABRICS. PAPERS F1-F13 READ AT THE 13TH SCIENTIFIC AKO MEETING HELD AT LUDWIGSHAFEN 3 NOV 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Nov 1938. 125f tables (Text in German) Mi $5.00, Enl Pr $17.50. PB 101901

1. Dyes, Azo - Germany 2. Dyes, Naphthol AS - Germany 3. Woolstra (Trade name) 4. AKO (Kommission für Azofarben) 5. Micro BIOS FD 290/50, Frames unnumbered.

Abstract available as PB 101901s. 4p. Mi $1.25, Ph $1.25. See also PB 101887-101889, 101902-101903.

REPORTS ON LAKE DYESTUFFS. PAPERS J1-J13 READ AT THE 13TH SCIENTIFIC AKO MEETING MAR 11, 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Mar 1938. 83f (Text in German) Mi $3.75, Enl Pr $12.50. PB 101887

1. Dyes, Lake - Germany 2. Dyes, Azo - Germany 3. AKO (Kommission für Azofarben) 4. Micro BIOS FD 300/50, Frames unnumbered.

Abstract available as PB 101887s. 3p. Mi $1.25, Ph $1.25. See also PB 101888-101889.

REPORTS ON MISCELLANEOUS AZO DYESTUFFS. PAPERS K1-K7 READ AT THE 13TH SCIENTIFIC AKO MEETING, MAR 11, 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Mar 1938. 39f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101888

1. Dyes, Azo - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 301/50, Frames unnumbered.

Abstract available as PB 101888s. 2p. Mi $1.25, Ph $1.25. See also PB 101887, 101889.

REPORTS ON NAPHTHOL AS DYESTUFFS. PAPERS L 1-2 READ AT THE 13TH SCIENTIFIC AKO MEETING, MAR 11, 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Mar 1938. 27f (Text in German) Mi $2.00, Enl Pr $5.00. PB 101889

1. Dyes, Naphthol AS - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 302/50, Frames unnumbered.

Abstract available as PB 101889s. 2p. Mi $1.25, Ph $1.25. See also PB 101887-101888.

THESES, NOTES AND EXTRACTS FROM LITERATURE RELATING TO THE PRODUCTION OF DYESTUFFS AND SYNTHETIC RUBBER I. G. Farbenindustrie A. G., Schkopau, Ger. 1920-1937. 484f tables (Text in German) Mi $9.00, Enl Pr $62.50. PB 101743

1. Dyes, Cyanine - Manufacture - Germany 2. Dyes, Polymethine - Preparation - Germany 3. Pyrylocyanine - Germany 4. Micro BIOS FD 2402/47, Frames 1-480.

Abstract available as PB 101743s. 2p. Mi $1.25, Ph $1.25. Contains thesis on heterocycle-polymethine dyes made from alpha and gamma picoline salts, by Karl Loeffler, Dresden; also a thesis on pyrylocyanine, by Oskar Rieser, Ulm; also extracts from technical journals.

Agriculture Chemicals

FUNDAMENTALS OF LIGNIN CHEMISTRY AS APPLIED TO FERTILIZERS, by J. Seiberlich. Jun 1945. 4p Available from the Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 101833

1. Lignin products (Chemical) 2. Fertilizers and manures - Manufacture.

Presented at the Quarterly meeting of the Northeastern Wood Utilization Council at Orono, Maine, Jun 29, 1945.

REVIEW OF WORK ON PLANT DISEASES. Rhenania-Ossag Mineralölwerke A. G., Hamburg, Ger. 1944. 19f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102224

1. Insecticides - Research - Germany 2. Plants - Diseases and pests - Germany 3. Micro BIOS FD 2874/46, Item 88, Frames 002349-002366.

Abstract available as PB 102224s. 1p. Mi $1.25, Ph $1.25.

STUDY OF AND IMPROVEMENT OF HOOK-UP WIRE INSULATIONS WITH SPECIAL REFERENCE TO FUNGICIDES. FIRST QUARTERLY REPORT, DEC 9, 1948 TO MAR 8, 1949, by L. H. Luce, K. N. Mathes, and others. Rennsselaer Polytechnic Institute, Troy, N. Y. Mar 1949. 79p photos, diagr, graphs, tables Mi $3.50, Ph $10.00. PB 101489

1. Fungicides 2. Wire - Fungus resistance 3. Wire - Insulation 4. SIG Contract W-36-039-sc-38206.

Contract no. W-36-039-sc-38206. Army Project no. 3-93-00-503. Signal Corps project no. 32-2005-33.

Plastics and Plasticizers

AIRCRAFT PROCESS SPECIFICATION FOR THE HEAT TREATMENT OF PERSPEX PANELS AND SHAPINGS. Gt. Brit. Ministry of Supply. Jul 1950. 2p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.15. PB 101963

1. Panels, Plexiglas - Heat treatment - Gt. Brit. 2. Plexiglas - Thermal properties - Gt. Brit. 3. MS DTD MS 925.

70-9999.

ANNEALING OF FORMED PERSPEX STRUCTURES, by E. W. Russell. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Apr 1949. 10p graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 101906

The relaxation of stress in plasticised perspex at annealing temperatures and at constant deformations occurs in two stages, the first rapid and the second slow. The temperature of this change, from one state to the other represents the second-order transition lowered by the applied forces from its normal value to the experimental temperature. The temperature dependence and magnitude of the stress to produce this lowering of the second-order transition temperature are similar to those of other vinyl polymers. The tensile stresses in a specimen during annealing tend to a value below this critical value. Cover date is 1950. Technical note no. Chem. 1094. S. O. Code no. 23-9006-19. ARC CP 19.

EQUIPMENT FOR TESTING THE COLD RESISTANCE OF PLASTIC STRIP, FILMS, FOILS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1944. 14f drawing (Text in German) Mi $1.75, Enl Pr $3.75. PB 101742

1. Plastics - Temperature effects - Germany 2. Plastics - Testing machines - Germany 3. Plastics - Impact tests - Germany 4. Micro BIOS FD 2355/47, Frames 1-12.

Abstract available as PB 101742s. 2p. Mi $1.25, Ph $1.25.

HEAT TREATMENT OF FLAT PERSPEX SHEETS, by E. W. Russell. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Feb 1949. 5p graphs. tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 101905

The heat treatment which has been recommended to improve the craze-resistance of flat methacrylate sheets is discussed. Distortion may be avoided by controlled heating during the initial cycle, and by annealing at a temperature just below the second order transition point during the cooling cycle. To define the latter the isothermal shrinkage of quenched material was measured. Cover date is 1950. Technical note no. Chem. 1088. S.O. Code no. 23-9006-18. ARC CP 18.

HIGH TEMPERATURE METAL TO METAL ADHESIVES, INTERIM REPORT by P. M. Elliott and W. C. Imholz. United States Rubber Company. Naugatuck Chemical Division, Naugatuck, Conn. Jul 1949. 46p photo, drawing, graphs, tables Mi $2.50, Ph $6.25. PB 102178

The results of the first twelve months work on a continuing program for the development of a plastic adhesive suitable for use on structural aircraft metals and plastics and temperatures up to 400°F are discussed. Formulations and strength values are presented for the best adhesives developed so far, which have been nitrile rubber phenolic resin combinations. Shear strength values have approximated 1000 psi at 400°F and 3500 psi at room temperature. The adhesives are being tested by bonding Clad 24S-T3 aluminum alloy sheet to itself and NE8630 steel sheet to itself in single 1/2 inch lap shear joints. A program of future work is presented. Contract W33-038-ac-20810. AAF TR 5896-1.

IMPACT COMPRESSION MOULDING OF THERMOPLASTICS. I. G. Farbenindustrie A. G., Schkopau, Ger. Nov 1941-Aug 1944. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 101738

1. Plastics - Molding, Impact - Germany 2. Micro BIOS FD 2362/47, Frames 1-3.

Abstract available as PB 101738s. 1p. Mi $1.25, Ph $1.25.

LIST OF PRODUCTS SUBMITTED TO THE TECHNICAL PLASTICS COMMITTEE (KUTEKO) AND THE TECHNICAL COMMITTEE FOR RUBBER (KAUTEKO) BETWEEN 1939 AND 1945. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1945. 43f tables (Text in German) Mi $2.50, Enl Pr $7.50. PB 102137

1. Plastics - Tests - Germany 2. Rubber, Synthetic - Tests - Germany 3. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 4. KUTEKO (Kunstoff - Technische Kommission) 5. Micro BIOS FD 2352/47, Frames 1-42.

Abstract available as PB 102137s. 1p. Mi $1.25, Ph $1.25.

PLASTICIZER F492 FOR POLYVINYLCHLORIDE. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Jul 1943. 15f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102092

1. Polyvinyl chloride - Plasticizers - Germany 2. F492 (Plasticizer) 3. Micro BIOS FD 1745/48, Frames 1-14.

Abstract available as PB 102092s. 1p. Mi $1.25, Ph $1.25.

REPORT NO. 2, APR 1946-JUL 1946, CONTRACT W-36-039-sc-32011. Princeton University. Plastics Laboratory, Princeton, N. J. Jul 1946. 40p tables Mi $2.25, Ph $5.00. PB 101817

1. Plastics - Research 2. Plastics - Dielectric properties 3. SIG Contract W-36-039-sc-32011 Report no. 2.

For 5th-7th, 10th reports see PB 101818-101821.

REPORT NO. 5, JAN 1947-APR 1947, AND SUMMARY REPORT, JAN 1946-APR 1947, CONTRACT NO. W-36-039-SC-32011. Princeton University. Plastics Laboratory, Princeton, N. J. Apr 1947. 181p graph, tables Mi $6.75, Ph $23.75. PB 101818

1. Plastics - Research 2. Plastics - Dielectric properties. 3. SIG Contract W-36-039-sc-32011 Report no. 5.

For 2d, 6th, 7th, 10th reports see PB 101817, PB 101819-101821.

REPORT NO. 6, APR 1947-JUL 1947, CONTRACT NO. W-36-039-SC-32011. Princeton University. Plastics Laboratory, Princeton, N. J. Jul 1947. 141p diagrs, tables Mi $5.75, Ph $18.75. PB 101819

1. Plastics - Research 2. Plastics - Dielectric properties 3. SIG Contract W-36-039-sc-32011, Report no. 6.

For 2d, 5th, 7th, 10th reports see PB 101817- PB 101819, 101820-101821.

REPORT NO. 7, JUL 1947-OCT 1947, CONTRACT NO. W-36-039-SC-32011. Princeton University. Plastics Laboratory, Princeton, N. J. Oct 1947. 128p photos, drawings, graphs, tables Mi $5.00, Ph $16.25. PB 101820

1. Plastics - Research 2. Plastics - Dielectric properties 3. SIG Contract W36-039-sc-32011, Report no. 7.

For 2d, 5th, 6th, 10th reports see PB 101817-101819, 101821.

REPORT NO. 10, APR 1948-JUN 1948, AND SUMMARY REPORT FOR 15 APR 1947-30 JUN 1948. CONTRACT W-36-039-SC-32011. Princeton University. Plastics Laboratory, Princeton, N. J. Jul 1948. 128p photos, diagrs, graphs, tables Mi $5.00, Ph $16.25. PB 101821

1. Plastics - Research 2. Plastics - Dielectric properties 3. SIG Contract W-36-039-sc-32011 Report no. 10.

Paints, Varnishes and Lacquers

BONDING OF SYNTHETIC RUBBER TO METAL. RUBBER TO METAL ADHESION. Metallgesellschaft A. G., Frankfort, Ger. Sep-Oct 1938. 103f graph, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 101281

1. Adhesives - Rubber to metal - Germany 2. BIOS FR 335 LD 3. Micro BIOS HEC 12099 4. Micro BIOS HEC 12107 5. Micro BIOS FD 4873/47, Frames 199-240 6. Micro BIOS FD 4873/47, Frames 358-418.

Abstract available as PB 101281s. 2p. Mi $1.25, Ph $1.25. Reports 1703 and 1712 as listed in BIOS FR 335, p. 191-192.

COLOURWASHES (INCLUDING PAINTS) ON EXTERNAL WALLS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Apr 1950. 6p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102016

1. Walls, External - Paints - Gt. Brit. 2. Paints, Weather resistant - Gt. Brit. 3. DSIR BRD 17.

S. O. Code no. 72-22-0-17.

DISTEMPERS ON WALLS AND CEILINGS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Sep 1950. 7p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102027

1. Distemper paints - Gt. Brit. 2. Walls, Internal - Paints 3. Ceilings - Paints 4. DSIR BRD 22.

S. O. Code no. 72-22-0-22.

GLUING TESTS WITH ROOM-TEMPERATURE-SETTING ADHESIVES TO FABRIC-BASE PLASTIC LAMINATES, by Herbert W. Eickner. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Aug 1949. 48p tables Mi $2.50, Ph $6.25. PB 101790

1. Adhesives - Plastic to glass 2. Adhesives - Plastic to cotton 3. Resins, Furan 4. Resorcinol - Uses 5. Glue, Casein 6. Glue, Resin 7. AAF TR 5928.

From Forest Products Laboratory, Madison, Wis. Purchase order nos. PO933-038) 47-359, PO (33-038) 47-2902E, PO(33-038)48-11, and PO(33-038)49-180.

Analytical Chemistry

ANALYTICAL METHODS: DETERMINATION OF ISOBUTYLENE IN FUEL GAS; DETERMINATION OF HYDROCARBONS WITH 1-5 C-ATOMS AND ISOMERS OF BUTANE AND BUTYLENE BY FRACTIONAL FINE DISTILLATION; BROMOMETRIC DETERMINATION OF OLEFINES AND IODINE NUMBER IN BENZINES AND DIESEL OILS BY THE MICRO-METHOD, AND THE SEMI-MICRO DETERMINATION OF THE OH-NUMBER. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1939-1944. 96f drawings, graphs, tables (Text in German) Mi $4.25, Enl Pr $13.75. PB 101735

1. Propene, 2-Methyl - Germany 2. Hydrocarbons - Fractionation - Germany 3. Olefins - Determination - Germany 4. Microchemical analysis - Germany 5. Micro BIOS FD 5464/47, Frames 1-96.

Abstract available as PB 101735s. 2p. Mi $1.25, Ph $1.25.

Chemical Engineering and Equipment

AKTENNOTIZ (LABORATORY NOTES ON PHYSICAL CONSTANTS OF VAPOR AND LIQUID IN A TWO-CHAMBER APPARATUS FOR OXYGEN PRODUCTION; THERMODYNAMIC CONSIDERATION OF N_2O_2 MIXTURES; RESTATEMENT OF THE MORE IMPORTATN THERMODYNAMIC, FORMULAS; USE OF ROTAMETER; SEPARATION OF LOWER PARAFFINS, ETC.) Messer & Co., G.m.b.H., Frankfurt am Main, Ger. Dec 1940-Nov 1947. 195f drawings, graphs, tables (Text in German) Mi $7.00, Enl Pr $26.25. PB 99844

1. Oxygen - Production - Germany 2. Rotameter (Trade name) 3. Thermodynamics - Germany 4. Micro BIOS FD 3425/48, Frames 57-250.

AROMATIZATION TESTS: SEMI-PLANT TESTS FOR THE PRODUCTION OF ALKYLBENZENE FROM BENZENE AND RUHRGASOL. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1944. 177f diagrs, graphs, tables (Text in German) Mi $6.50, Enl Pr $23.75. PB 101746

1. Aromatization - Tests - Germany 2. Benzene, Alkyl - Production - Germany 3. Micro BIOS FD 5466/47, Frames 1-170.

Abstract available as PB 101746s. 2p. Mi $1.25, Ph $1.25.

CALCULATIONS AND DRAWINGS FOR THE PRODUCTION OF TRIETHANOLAMINE. I. G. Farbenindustrie A. G., Schkopau, Ger. Jan 1940. 47f drawings (Text in German) Mi $2.50, Enl Pr $7.50. PB 102144

1. Triethanolamine - Production - Germany 2. Triethanolamine - Production - Equipment - Germany 3. I. G. Farbenindustrie A. G. - Plants - Layout 4. Micro BIOS FD 2626/47, Frames 1-22.

Abstract available as PB 102144s. 1p. Mi $1.25, Ph $1.25.

DESCRIPTIONS AND FERROPRINTS OF THE VINYL CHLORIDE PLANT, AND EXPERIMENTS ON WET PROCESS PRODUCTION. I. G. Farbenindustrie A. G., Schkopau, Ger. 1937-1938. 34f drawings, diagrs, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 102163

1. Vinyl chloride - Production - Germany 2. I. G. Farbenindustrie A. G. - Plants - Layout 3. Vinyl chloride - Production - Equipment - Germany 4. Micro BIOS FD 2651/47, Frames 1-19.

Abstract available as PB 102163s. 2p. Mi $1.25, Ph $1.25.

DESCRIPTION OF, AND COST ESTIMATES FOR, EQUIPMENT FOR PRESSURE HYDROGENATION AND LOW-TEMPERATURE DISTILLATION PLANT. Lurgi Gesellschaft für Wärmstechnik m.b.H., Frankfort, Ger. 1937-1944. 698f (Text in German) Mi $9.00, Enl Pr $91.25. PB 101890

1. Hydrogenation plants - Equipment - Germany 2. Distillation plants - Equipment - Germany 3. Micro BIOS FD 173/47, Frames 1-692.

Abstract available as PB 101890s. 1p. Mi $1.25, Ph $1.25.

DRAWINGS OF BUILDINGS FOR HYDROGENATION PLANT; DRAFTS OF PATENT APPLICATIONS RELATING TO OPERATIONAL DEVICES, AND TO THE PRODUCTION OF HIGH MOLECULAR COMPOUNDS FROM LOWER MOLECULAR OLEFINES. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1942-1944. 457f drawings, diagr (Text in German) Mi $9.00, Enl Pr $60.00. PB 101919

1. Hydrogenation plants - Construction - Germany 2. Hydrogenation - Patents - Germany 3. Micro BIOS FD 163/47, Frames 1-308.

Abstract available as PB 101919s. 1p. Mi $1.25, Ph $1.25.

EQUIPMENT OF ETHYLENE PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1940-1943. 71f diagrs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 102140

1. Ethylene - Production - Germany 2. I. G. Farbenindustrie A. G. - Plants - Germany 3. Compressors, Gas - Germany 4. Ovens, Electric - Germany 5. Propene, 2-Methyl - Production - Germany 6. Micro BIOS FD 2612/47, Frames 1-66.

Abstract available as PB 102140s. 2p. Mi $1.25, Ph $1.25. For other papers from this plant see PB 102139, 102141-102143, 110397.

LIQUID OXYGEN GENERATING AND HANDLING EQUIPMENT, by Frank S. Bouis. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Jul 1950. 5p Mi $1.25, Ph $1.25. PB 101488

This falls into 6 categories: generators, tanks, hoses (transfer), couplings, cylinder charging pumps and transfer pumps. Factual data are given. No conclusions are derived. AAF TSEAA MR 660-133.

Miscellaneous Chemicals

DIE BESTIMMUNG VON HEXALOL ALS DIBENZAL-HEXALOL (DETERMINATION OF "HEXALOL" AS "DIBENZAL-HEXALOL"). Parxol Werke, Schrobenhausen, Ger. Jun 1940. 3f graph (Text in German) Mi $1.25, Enl Pr $1.50. PB 101912

1. Micro BIOS FD 955/47, Frames 1-3.

CHEMISTRY OF ORGANO-PHOSPHORUS COMPOUNDS, by R. B. Fox and L. B. Lockhart. U. S. Naval Research Laboratory. Jul 1948. 102p tables Mi $4.50, Ph $13.75. PB 101804

Report gives as complete coverage as possible of methods of preparation and reactions of organophosphorus compounds, and discussion of related topics such as esters of phosphorous and phosphoric acids and various nitrogen-phosphorus compounds. A bibliography of over 800 references is included. NRL C-3323.

INCREASE LIGHT-SENSITIVITY OF A DIAZOTYPE SUBSTANCE. FINAL REPORT, ARMOUR PROJECT 90-595C, PERIOD APR 15, 1948 TO APR 15, 1950, by Gilbert Gavlin. Armour Research Foundation, Chicago, Ill. Apr 1950. 74p fold. graphs Mi $2.75, Ph $7.50. PB 101866

The purpose of the present investigation has been obtain sufficiently reliable data with which to accurately qualify the experimental conditions necessary to effect the decomposition of a large number of diazo molecules by relatively few light quanta. Dept. of the Army project: 3-99-04-052. Signal Corps project: 195B. SIG Contract W-36-039-sc-36834.

MANUFACTURE OF "KRESIDIN-O-ACID MOL. 217" AND OF "TRIFLUORMETHYLNITRANILIN". I. G. Farbenindustrie A. G., Höchst, Ger. 1945. 5p (Text in German and English) Mi $1.25, Ph $1.25. PB 101915

1. Micro BIOS FD 1375/49, Frames 1-4.

Abstract available as PB 101915s. 1p. Mi $1.25, Ph $1.25. Will not reproduce well.

NOMENCLATURE OF ORGANIC PHOSPHORUS COMPOUNDS TENTATIVELY ACCEPTED BY THE ACS COMMITTEE AT CHICAGO, 3-8 SEPTEMBER 1950, by George M. Steinberg. U. S. Chemical Corps. Technical Command. Army Chemical Center, Md. Sep 1950. 9p tables Mi $1.25, Ph $1.25. PB 102126

1. Phosphorus compounds, Organic - Nomenclature 2. CWS TCIR 602.

Project 4-08-03-005.

NOTES, REPORTS, AND CORRESPONDENCE RELATING TO PIMELIC ACID, ACETALS, BUTOL, ACETYLENE, ETC. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1942-1944. 210f drawing, diagr, graphs, tables (Text in German) Mi $7.50, Enl Pr $27.50. PB 101943

1. Pimelic acid - Production - Germany 2. Golpanol B (Trade name) 3. Acetaldehyde - Production - Equipment - Germany 4. Acetylene - Production - Germany 5. Micro BIOS FD 1332/49, Frames 1-205.

Abstract available as PB 101943s. 2p. Mi $1.25, Ph $1.25.

PHENYLETHYL ALCOHOL AS A STANDARDIZATION LIQUID FOR VISCOSIMETRIC DETERMINATION OF BUNA AND OPPANOL. I. G. Farbenindustrie A. G., Schkopau, Ger. 1944. 37f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101740

1. Phenylethyl alcohol - Germany 2. Micro BIOS FD 2353/47, Frames 1-34.

Abstract available as PB 101740s. 1p. Mi $1.25, Ph $1.25.

PREPARATION AND PROPERTIES OF INFRARED PHOSPHORS. FINAL REPORT FOR CONTRACT NOBSR 39045 COVERING THE PERIOD OCT 1, 1946 TO JUN 30, 1949. Polytechnic Institute of Brooklyn, Brooklyn, N. Y. 1949. 243p drawings, graphs, tables Mi $9.00, Ph $31.25. PB 102229

The results recorded in this report are concerned primarily with research on the properties of the Standard VI, VII and B-1 phosphors. Some attention has been given to the preparative procedures for the strontium selenide, samarium-europium phosphor and some improvements have been made. The distribution of the rare earth activator ions between flux and base material has been studied by means of radioactive tracers. By this means it has been found that the distribution of the trivalent rare earth ions is profoundly affected by the presence of oxide in the phosphor mixture. The intersolubilities of the rare earth ions in alkaline earth sulfides has also been investigated by precision X-ray methods. From this investigation and from other da some insight has been gained into the valence state of the activator ions and the way in which they are incorporated in the lattice of the host crystal. A study of zinc sulfide-copper quenching and stimulating phosphors indicates that the mechanism of

stimulation is essentially the same as that of quenching. Attempts to prepare other infrared-sensitive phosphors have not been successful but the procedures for the preparation of a number of different compounds have been worked out. The techniques have been developed for the measurement of the absorption and reflection coefficients of the excited and exhausted phosphors. Thermal glow curve data have been used to find the activation energy of the deep traps associated with the auxiliary activator. Some data are given on the background (normal phosphorescence) properties of the Std. VI phosphor and its variation with state of excitation, activator concentration and previous stimulation. Two instruments for the measurement of phosphor properties are described. A recording photometer with a sensitivity of 3.7×10^{-10} lumens for a full scale deflection on the most sensitive range has been constructed. The equipment for the measurement of dielectric constant and dielectric loss of infrared phosphors under stimulation and excitation has been completed and is described in the report. Contains list of publications and theses prepared under this contract.

TOLUENE PLANT: REPORTS, DRAWINGS, ETC. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1939-1942. 250f drawings, graphs, tables (Text in German) Mi $9.00, Enl Pr $32.50. PB 101747

1. Toluene - Production - Germany 2. Toluene - Production - Plant design - Germany 3. Micro BIOS FD 5458/47, Frames 567-805.

Abstract available as PB 101747s. 2p. Mi $1.25, Ph $1.25.

UNTERSUCHUNG VON WOLFRAMSÄUREN (EXAMINATION OF DIFFERENT BATCHES OF TUNGSTIC ACID), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Feb 1940. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102106

1. Tungstic acid - Production - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11208 4. Micro BIOS FD 3829/47, Frames 1-3.

English abstract included. Listed in BIOS FR 925, appx. I, p. 20.

VERFAHREN ZUR HERSTELLUNG VON FLÜSSIGKEITEN MIT VON DER TEMPERATUR WEITGEHEND UNABHÄNGIGEN PHYSIKALISCHE EIGENSCHAFTEN (PROCESS FOR PRODUCING FLUIDS WITH PHYSICAL CHARACTERISTICS WHICH ARE INDEPENDENT OF TEMPERATURE OVER A WIDE RANGE), by H. Harms. Deutsche Versuchsanstalt für Luftfahrt E. V. Institut für Trieb- und Schmierstoffe. Feb 1944. 14f graphs, tables (Text in German and English) Mi $1.75, Enl Pr $3.75. PB 101727

1. Liquids - Viscosity - Germany 2. Fluids - Viscosity - Germany 3. ZWB UM 757 4. Micro BIOS FD 2876/46, Item 33, Frames 1-9+5.

ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

Communication Equipment

CALIBRATION OF MICROPHONES TO 100 KC, by Henry F. Koster. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1950. 17p diagrs, graphs Mi $1.75, Ph $2.50. PB 101958

Apparatus and procedure for the free field calibration of Western Electric 640 AA condenser microphones to 100 KC in air by the reciprocity method is described. The free Field Calibration curves of commercial crystal microphones obtained by using the standard 604 AA microphones are given. A method for rapidly obtaining the response curve of an unknown microphone directly on a cathode ray tube is described. Preliminary results are given. Aero Medical Laboratory E. O. no. 659-63. AAF TR 5828.

CROSSTALK MEASUREMENT IN FREQUENCY DIVISION MULTIPLEXED COMMUNICATION SYSTEMS, by Marshall L. Ribe. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Jul 1950. 58p photos, diagr, graphs Mi $2.75, Ph $7.50. PB 101959

1. Radio communication, Multiplexed - Crosstalk measurements 2. Communication systems, Multiplexed - Crosstalk measurements 3. SCEL TM M-1306.

Signal Corps Proj. no. 8241. Dept. of the Army Proj. no. 3-24-06-046.

FU HE V: GERMAN GROUND VHF INTERCEPT RECEIVER. U. S. Army. European Theater of Operations. Chief Signal Officer. n.d. 10p photos, fold. drawing Mi $1.25, Ph $1.25. PB 102034

1. Radio receivers (VHF) - Germany 2. Radio receivers - Interception - Germany 3. Fu HE v (Radio receiver).

Technical intelligence report. This report will not reproduce well.

GERMAN REPLACEMENT PARTS KIT FOR FIELD TELEPHONES AND SWITCHBOARDS, by J. F. Doyle. U. S. Army. European Theater of Operations. Chief Signal Officer. Oct 1944. 7p photos, diagrs Mi $1.25, Ph $1.25. PB 102035

1. Telephones, Field - Parts - Germany 2. Telephones, Field - Switchboards - Parts - Germany.

Legends in German. This report will not reproduce well.

HELIX AS A WAVEGUIDE FOR SLOW WAVES, by E.T. Kornhauser. Harvard University. Cruft Laboratory. Aug 1949. 56p diagrs, graphs Mi $2.75, Ph $7.50. PB 102182

An analysis was made of the properties of an electromagnetic wave propagated in the axial direction along an infinitely long helical coil of perfectly conducting wire which is applicable to traveling wave tubes. Velocities were used of the order of one tenth the velocity of light (slow waves) for the practical range of electron accelerating voltages. The slotted helical structure unequivocally resolved the question of which set of boundary conditions is more appropriate to an idealized helical surface. Conclusive confirmation of the Schelkunoff solution as an approximation for an actual helix is given by the experimental evidence. The treatment also facilitated a discussion of the effect of the finite diameter of the wires on the phase velocity curves. It was shown that the Schelkunoff solution represents a good approximation to a true solution of the helix. Contract N5-ori-76. Task order no. 1. NR-078-011. HU CL TR 88.

IMPROVED TECHNIQUE FOR COMPARING HARMONICALLY RELATED FREQUENCIES, by David I. Troxel. U. S. Naval Research Laboratory. Jul 1950. 11p photos, diagrs, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 101798

The customary method used to check the calibration of many frequency measuring equipments is to compare the frequency in question with a standard frequency through oscilloscope Lissajous patterns. A circuit developed at the Naval Research Laboratory inherently produces a signal exactly equal to the standard frequency when the signal to be calibrated is adjusted to any harmonic of the standard frequency, and a simple one-to-one pattern is thus obtained for all harmonic points. NRL R 3701.

LONG TERM PREDICTION OF MAXIMUM USABLE FREQUENCIES FOR SKY-WAVE RADIO COMMUNICATION, PREPARED BY RADIO PROPAGATION UNIT, BALTIMORE SIGNAL DEPOT, PAUL O. LAITINIAN, CHIEF. U. S. Signal Corps. Radio Propagation Unit. Baltimore Signal Depot, Baltimore, Md. Jun 1950. 70p diagrs, maps, tables Mi $3.00, Ph $8.75. PB 101579

This report shows long term predictions of maximum usable frequencies and optimum traffic frequencies for high frequency radio communication. The predictions of this report are for sunspot numbers O and 130 and, thus, are not liable to errors due to incorrect predictions of sunspot number. A figure is included giving the trend of the present sunspot number cycle and Waldemeir's predicted trend. Nomograms to find the maximum usable frequencies for distances other than the standard distances at any sunspot number are included. The introduction of this report shows the scope and defines maximum usable frequencies and optimum traffic frequencies. The second section explains how the predictions were obtained and, in addition, briefly discusses ionospheric layers, solar activity, and the effects of the earth's magnetic field for those who may be interested. The third section shows how these predicted curves can be used in long term planning. SIG RPU TR 8.

METHODS OF MEASURING THE PROPERTIES OF IONIZED GASES AT MICROWAVE FREQUENCIES, by David J. Rose, Donald E. Kerr, Manfred A. Biondi, Edgar Everhart and Sanborn C. Brown. Massachusetts Institute of Technology. Research Laboratory of Electronics. Oct 1949. 44p diagrs, graphs, table Mi $2.50, Ph $6.25. PB 102186

The techniques used in measuring the properties of ionized gases at microwave frequencies are outlined. Methods are described for measuring the cavity's Q from standing-wave patterns, measuring the resonance curve half-width, obtaining unloaded Q from the slope of the curve of the position of the voltage minimum versus wavelength, determining the electric field from measurements of power and cavity parameters, determining the discharge admittance, measuring the electron density, and measuring the transient standing-wave phenomena. In the study of the ionization processes, of breakdown, and of low current-density discharge phenomena, high-Q devices may be used. For high current-density discharges, low-Q devices are often required. Therefore, methods for determining physical quantities, such as field strength and complex conductivity, are discussed for high- and low-Q devices. MIT RLE TR 140.

MULTIPLE SPEED, ELECTRICALLY CONTROLLED DRIVE UNIT. DISCLOSURE OF INVENTION BY MRS. M. E. NASH, SEPT 29, 1944. Harvard University. Radio Research Laboratory. 1944. 11p photo, fold drawings Mi $1.75, Ph $2.50. PB 102125

1. Electrical equipment - Inventions 2. HU RRL D 103.

Inventors: Thomas Mott Shaw and Chester Williams.

RADIO RELAY DESIGN DATA 60-600 MCS, by Richard Guenther. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Jul 1950. 32p fold diagr, graphs (4 fold) Mi $2.25, Ph $5.00. PB 101612

This paper presents general design data for a complete radio relay transmission system. All parameters are shown in graphs either as gain or attenuation figures (decibels). In order to get realistic figures for various modulation systems a new parameter has been defined which accounts for the efficiency of the demodulator. Numerical examples are presented to show the convenience in practical use permitting a quick and reliable design. Signal Corps Proj. no. 8241. Dept. of the Army Proj. no. 3-24-06-046. SCEL TM M-1308.

TRANSLATION OF TECHNICAL MANUAL D762/5 ON OPERATION AND MAINTENANCE OF FIELD RELAY REPEATER. U. S. Army. European Theater of Operations. Chief Signal Officer. Aug 1938. 9p photos, diagrs, drawings Mi $1.25, Ph $1.25. PB 102032

1. Circuits, Amplifier - Germany 2. Amplifiers, Telephone - Germany 3. Telephones - Repeaters - Germany.

Technical intelligence report. Cover date is 1944. This report will not reproduce well.

Electronics

CORRELATION OF PULSED AND D-C ELECTRON EMISSION FROM AN OXIDE CATHODE, by R. B. Bien. Massachusetts Institute of Technology. Research Laboratory of Electronics. Jun 1949. 11p graphs Mi $1.75, Ph $2.50. PB 102185

Under suitable temperature conditions, i.e., at 843°K and below, it was found that the temperature variation of pulsed and d-c thermionic emission from an oxide cathode is the same, and yields a single Richardson line. A variety of tubes were tested in which silicon was added as an adulterant in the oxide. The Richardson plots showed that work functions and log A vary linearly with percent of adulteration. A rise and a decay in temperature-limited pulsed emissions were observed at temperatures above 843°K. These effects were explained by the temperature rise of the cathode, and possible surface electrolysis or positive ion bombardment. MIT RLE TR 73.

DIELEKTRISK HÖGFREKVENSUPPVÄRMING (HIGH FREQUENCY DIELECTRIC HEATING), av Hjalmar Granholm och Vitold Saretok. Sweden. Statens Kommittee för Byggnadsforskning. 1950. 79p photos, diagrs, graphs, tables (Text in Swedish) Mi $3.50, Ph $10.00. PB 101837

In the first part of this report the theory of high frequency dielectric heating is presented. It is shown,

that in most materials encountered in practice, the main part of the dielectric loss is due to ionic effects. In the second part of the report the high frequency generator and different electrode systems are described. In the third part different applications of dielectric heating in production are discussed. Summary in English. Sweden. Statens Kommittee för Byggnadsforskning. Rapport 20.

DUAL-FREQUENCY BAND CIRCUITS, by William H. Huggins. U. S. Air Force. Cambridge Research Laboratories, Cambridge, Mass. May 1950. 36p diagrs, graphs Mi $2.25, Ph $5.00. PB 101582

Dual pass-band coupling circuits are often needed in amplifiers that must pass two separate frequency bands simultaneously. This report describes certain coupling circuits useful for this purpose and describes in a rather general way several techniques and viewpoints that have proven useful in synthesizing these circuits. Examples of a typical design are given. AAF CRL E5059.

FINAL REPORT, PERIOD 7/7/47-7/7/48 RESEARCH AND DEVELOPMENT CONTRACT NO. W-36-039-SC-32349, MODIFICATION #1. Smith, Melvin L., Laboratories, Kane, Pa. 1948. 114p photos, fold drawings, graphs Mi $4.75, Ph $15.00. PB 101845

1. Oscillators, Crystal - Glass bulb assembly 2. Circuits, Quartz 3. SIG Contract W36-039-sc-32349.

Department of Army project: 3-24-02-021. Signal Corps project 862A.

FINAL REPORT ON BROADBAND WAVEGUIDE COUPLINGS. Sperry Gyroscope Co., Inc., Great Neck, N. Y. Apr 1950. 112p photos, fold drawings, fold graphs Mi $4.75, Ph $15.00. PB 101755

This report contains a resume of the work performed in developing the design techniques for broadband choke flanges and spring-finger metal gaskets. The techniques were applied to the development of a series of couplings to fit each of the waveguide sizes in common use by the armed services. Information is given on the type of equipment used; the effect of various dimensions on performance; a mathematical approach to the optimum design; a discussion of physical limitations; and an evaluation of a particular connector for broadband application before and after re-design. Prepared for the Department of the Army Signal Corps Engineering Laboratories, Squier Signal Laboratory, Fort Monmouth, N. J. on Contract W36-039-sc-36855. Department of the Army Project: 3-26-00-600. Sperry engineering report no. 5224-1184.

FURTHER MEASUREMENT OF AIRCRAFT SPEED BY RADAR USING GL.MK. III AND SCR. 584, by G.S. Hislop, A. K. Weaver, and P. H. Blundell. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jun 1945. 25p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.15. PB 101661

The initial attempts made in 1943 to measure aircraft speed by Radar did not yield very satisfactory results, as there were several large discrepancies between the results obtained from the Radar equipment and the pilot's observations. Consequently a further attempt using additional Radar equipment and an automatic observer in the aircraft has been carried out. As before the tests were made in cooperation with the Radar Research and Development Establishment (formerly A.D.R.D.E.), Great Malvern. Cover date is 1950. S. O. Code no. 23-2387. ARC RM 2387.

IONOSPHERIC EFFECTS OF SOLAR FLARES, PRELIMINARY REPORTS NO. 2 AND 3, BY R. LINDQUIST JUL 1948-JUN 1949. Chalmers University of Technology, Göteborg, Sweden. Oct 1949. 15p graphs Mi $1.75, Ph $2.50. PB 101547

1. Ionospheric measurements - Sweden 2. Solar radiation - Sweden 3. Chalmers University of Technology, Gothenburg, Sweden. Transactions no. 95 4. Chalmers University of Technology, Gothenburg, Sweden. Research Laboratory of Electronics, Report no. 13.

Transactions nr 95, 1950. Reports from the Research Laboratory of Electronics no. 13. Preliminary results for Mar-Jun 1948 issued as Report no. 8 of Research Laboratory of Electronics (PB 98874).

MEASUREMENT TECHNIQUES. FINAL REPORT, by F. T. Hall. Pennsylvania State College. Dept. of Electrical Engineering, State College, Pa. Jan 1948. 39p photos, drawings, graphs, tables Mi $2.25, Ph $5.00. PB 101802

A bridge was developed for making precise impedance measurements at frequencies between 300 and 2000 mc. The bridge is designed and operated on the same principles as the low frequency bridges but uses transmission lines as the variable reactance elements. Tests made with this bridge showed that with it very accurate measurements could be made of the impedance of circuits that are purely reactive. To make possible the measurement of general unknown impedances a thermistor was placed in parallel with the standard reactance arm. Watson contract no. W-38-099-ac-135.

MICROWAVE FIELD-MEASUREMENTS. I. MEASUREMENT OF SURFACE-CURRENT AND CHARGE DISTRIBUTIONS ON METAL SURFACES AT MICROWAVE FREQUENCIES, by Beverly C. Dunn, Jr. and Ronold King. Harvard University. Cruft Laboratory. Sep 1949. 80p photos, diagrs, drawings, graphs Mi $3.50, Ph $10.00. PB 102179

Elementary handprobe techniques for measuring the characteristics of surface-current and charge distributions on metal surfaces at microwave frequencies are described. An arrangement of equipment for measuring surface densities at 3000 megacycles is shown. The principles of probe operation are explained, and techniques for measuring the direction, amplitude, and phase of the surface fields or densities are outlined. Certain aspects of the method of phase measurement based upon interference of the measured signal and a signal on linearly variable reference phase are discussed. Factors limiting the accuracy of measurement are emphasized. Contract N5ori-76. Task order no. 1. NR-078-011. HU CL TR 71.

PARASITIC VIBRATIONS IN QUARTZ OSCILLATOR PLATES. Armour Research Foundation, Chicago, Ill. Jul 1947. 197p photos, fold drawings, graphs Mi $4.50, Ph $13.75. PB 101721

A theoretical study is made of the steady state and transient frequency response of the equivalent circuit

of a piezoelectric resonator. A general response equation has been derived and a set of curves drawn so that if the parameters of the equivalent circuit are known these curves may be used to determine admittance or impedance for any frequency. Project no. 90-408A, report no. 11. U. S. Signal Corps, Squier Signal Laboratories, Fort Monmouth, New Jersey. SIG Contract W36-039-sc-32328.

PHASE SHIFT OF MICROWAVES IN PASSAGE THROUGH PARALLEL-PLATE ARRAYS, by D. J. Epstein. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Aug 1950. 38p photos, diagrs, graphs Mi $2.25, Ph $5.00. PB 101754

The present paper is concerned with an experimental investigation to determine whether the theory based upon an idealized model is applicable to the structures normally encountered in practice. With the aid of a microwave interferometer operating in the K-band range, measurements have been made of the phase shift experienced by a normally incident wave in its passage through parallel-plate slabs of various thickness. The experimental results show a general agreement with the theory. The discrepancy which does exist appears due to the finite thickness of the plates used. Contract W-44-009 eng-541. ONR Contract N5ori-07801. Work reported in this document was made possible through support extended to the Massachusetts Institute of Technology, Laboratory for Insulation Research, by the Engineer Research and Development Laboratories under Contract W-44-009 eng-541 and later by the Navy Department (Office of Naval Research), the Army Signal Corps and the Air Force (Air Materiel Command) under ONR Contract N50ori-07801, NR-074-041. MIT LIR TR 42.

PIEZOELECTRIC INVESTIGATIONS. FIFTH SEMI-ANNUAL TECHNICAL REPORT ON CONTRACT NO. W28-003-SC-1556 TO U. S. ARMY SIGNAL CORPS. PART II. Wesleyan University. Scott Laboratory of Physics, Middletown, Conn. Jan 1948. 86p diagrs, tables Mi $3.75, Ph $11.25. PB 101641

1. Crystals, Piezoelectric - Research 2. Radio frequencies - Research.

See PB 101640 for Part I. For 1st - 5th, Part I, 6th - 10th reports see PB 101636-PB 101640, PB 101642 - PB 101647s. Contents: Manual of piezoelectric data, by Karl S. Van Dyke, (Vol. I) 78p. For Vols. II-III, and 2nd ed. (Parts I-II), see PB 101643, PB 101646, PB 101647 and PB 101647s.

PIEZOELECTRIC INVESTIGATIONS. TENTH REPORT ON CONTRACT NO. W28-003-SC-1556 TO U. S. ARMY SIGNAL CORPS, by Karl S. Van Dyke, Jan 1- Mar 31, 1950. Wesleyan University. Scott Laboratory of Physics, Middletown, Conn. Mar 1950. 35p drawings, graphs, tables Mi $2.25, Ph $5.00. PB 101647

1. Crystals, Piezoelectric - Research 2. Radio frequencies - Research.

See also PB 101647s. For 1st to 9th, supplement to 10th reports see PB 101636 - PB 101646, PB 101647s. Dept. of the Army project 3-99-11022. Signal Corps project 142B. Placed by U. S. Army Signal Corps Engineering Laboratory, Fort Monmouth, Red Bank, New Jersey. Contents: Manual of piezoelectric data, by Karl S. Van Dyke and G. D. Gordon. 2nd ed. (Part I) 35p. For Vols. I-III and 2nd ed. (Part II) see PB 101641-PB 101643, PB 101646 and PB 101647s.

THE RESONANT FREQUENCY OF A CAVITY-TYPE FILTER AS A FUNCTION OF THE SIZE OF THE COUPLING IRIS, by W. W. Balwanz. U. S. Naval Research Laboratory. Apr 1949. 36p diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 101869

Experiments were conducted to determine the degree to which dependance can be placed upon simple cavity theory for determining the required cavity dimensions of a cylindrical cavity-type filter for use at microwave frequencies, and to establish some general rules for determining the size and location of irises to be used in coupling the cavity. The results show that calculations based upon simple cavity theory are accurate to with 2 percent, provided certain precautions are taken in determining the size and position of the coupling iris. NRL R 3399.

TECHNIQUES OF MEASURING THE PERMITTIVITY AND PERMEABILITY OF LIQUIDS AND SOLIDS IN THE FREQUENCY RANGE 3 C/S TO 50 KMC/S, BY W. B. WESTPHAL WITH THE TECHNICAL RESISTANCE OF H. M. DUNN, P. A. FERGUS, AND E. MCCARTY. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Jul 1950. 182p photos, diagrs, graphs, tables Mi $6.75, Ph $23.75. PB 101759

The present report covers the techniques, calculations, and equipment[1]) used in this laboratory for low field strength measurements of the parameters ϵ and μ which describe the interaction between electromagnetic fields and dielectric materials. With these techniques, measurements have been made over wide ranges of frequency and temperature as previously reported.[2]) The first section deals with the application of electrodes to the samples and with the limitations imposed by such electrodes. Next an analysis is given of a.c. bridges, especially of a conjugate Schering bridge, for dielectric measurements. A general description and comparison follows of methods using resonant circuits, including cavity resonators. The fourth section enumerates general transmission line methods including reflection and transmission techniques. Comparisons with resonance methods are drawn and schematic diagrams of equipment are given. The remainder of the report is mainly reference material. O.N.R. Contract N5ori-07801. Work reported in this document was made possible through support extended to the Massachusetts Institute of Technology, Laboratory for Insulation Research, jointly by the Navy Department (Office of Naval Research) the Army Signal Corps, and the Air Force (Air Materiel Command) under ONR Contract N5ori-07801, NR-074-041. MIT LIR TR 36.

THEORY OF COLLINEAR ANTENNAS, by Ronold King. Harvard University. Cruft Laboratory. Oct 1949. 42p diagrs, graphs Mi $2.50, Ph $6.25. PB 102181

If a given number of collinear antenna arrays are individually center-driven it was found that the transmission lines can not be in the neutral plane except in the case of a central unit if the number of antennas is odd. This general case is not practical but in a single-center driven unit with symmetrical, parasitic, collinear elements the driving transmission line is in the neutral plane and may be replaced by an equivalent

generator and terminal zone network at the center of the middle unit. An array with two parasites was analyzed and the center-driven collinear antenna with outer elements connected by phase reversing stubs was studied. It is shown that the currents in the outer units are not symmetrical and that they differ in magnitude and distribution from the current in the central unit. Contract N5 ori-76. Task order no. 1. NR-078-011. HU CL TR 91.

WAVE PROPAGATION IN PERIODIC MEDIA, by David Slepian. Harvard University. Cruft Laboratory. Oct 1949. 35p diagrs, graphs Mi $2.25, Ph $5.00. PB 102180

This investigation of wave propagation in periodic media is concerned with the solution of the equation $\nabla^2\psi + U\psi + E\psi = 0$ subject to certain described boundary conditions. A unified theoretical treatment of Bloch-wave solutions that is independent on dimensionality, and a more general and more satisfactory approximation method are provided. The two cases discussed are the electromagnetic wave propagation through periodic arrays of conductors and the quantum mechanical treatment of crystals. An application is made to lattices of finite extent and an analogy between such structures and the band-pass filter is given. The specific case of a square lattice of circular cylindrical conductors is worked out in detail for the various possible polarizations. Contract N5 ori-76. Task order no. 1. NR-078-011. HU CL TR 90.

Generators, Motors, Transmission, Distribution, and Allied Equipment

EFFECTS OF TERMINAL VOLTAGE, LOAD CURRENT, AND MINIMUM ROTOR SPEED ON THE WEIGHT OF D-C AIRCRAFT GENERATORS, by D. H. Scott. U. S. Naval Research Laboratory. Apr 1950. 76p diagr, graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. PB 101657

As one step toward determining the weights of the various electrical system components for an over-all system weight study, empirical equations were developed which express the relation between total generator weight and the power output per minimum rotor speed. The ranges over which variables were investigated were: terminal voltage from 30 to 120 volts, load current from 100 to 400 amperes, and minimum rotor speed from 3000 to 8000 rpm. The empirical equations are limited by the assumptions made to derive them, but the method of derivation can be used to obtain substitute equations if different assumptions are required. NRL R 3649.

A PARASITIC FM MEASUREMENT TECHNIQUE FOR AM SIGNAL GENERATOR, by William E. Leavitt. U. S. Naval Research Laboratory. Jul 1950. 17p photos, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 101871

A method of analyzing the amount of frequency modulation present in amplitude-modulated signals has been made possible by use of the r-f wave analyzer. A measurement technique for determining the degree of spurious modulation components present and a means for defining the amount of FM in AM generators was devised. NRL R 3696.

RESEARCH AND DEVELOPMENT OF VARIOUS CONFIGURATIONS OF CORE MATERIALS FOR OPTIMUM TRANSFORMER DESIGN. THIRD QUARTERLY REPORT, OCT 1-DEC 1, 1949, ON CONTRACT NO. W-36-039-SC-38255, by C. F. Rains, R. C. McMaster, R. L. Merrill, E. F. Zoltanski, and C. F. Salt. Battelle Memorial Institute, Columbus, Ohio. Jan 1950. 48p photos, diagrs, graphs Mi $2.50, Ph $6.25. PB 101753

1. Sandwich construction - Core materials 2. Transformers - Cores.

Signal Corps Project no. 32-2006-3. For 1st report see PB 101752.

RESEARCH AND DEVELOPMENT OF VARIOUS CONFIGURATIONS OF CORE MATERIALS FOR OPTIUM TRANSFORMER DESIGN. FIRST QUARTERLY REPORT, APR 1-JUN 30, 1949 ON CONTRACT NO. W-36-039-SC-38255, by C. F. Rains, R. C. McMaster, R. L. Merrill, E. F. Zoltanski, and C. F. Salt. Battelle Memorial Institute, Columbus, Ohio. Jul 1949. 105p drawings, diagrs, graphs Mi $4.50, Ph $13.75. PB 101752

1. Sandwich construction - Core materials 2. Transformers - Cores.

Signal Corps Project no. 3-26-00-600. For 3d report see PB 101753. Appendices are bibliographies on: Transformer design and theory (33p); Magnetic materials (9p); Instrumentation for magnetic testing (11p); Patent numbers and inventors (6p).

Miscellaneous

DOUBLE CONTACT SELF-SEALING CONNECTOR. FINAL REPORT, by E. A. Sprigg and J. H. Schaefer. Buggie, H. H. & Co., Toledo, Ohio. Apr 1949. 77p drawings (8 fold) Mi $3.50, Ph $10.00. PB 101756

The most promising basic design is discussed in detail and the various modifications subsequent to it are reviewed. The incorporation of these modifications in the developmental samples gave the first practical analysis of the connector from a cost and engineering viewpoint. Cover title is Two contact self-sealing connectors. Contract no. W-36-039-sc-32346, U. S. Army. SCEL, Fort Monmouth, N. J. File no. 15975-PH-46-91 (SCEL).

ELECTROFORMING OF MILLIMETER-WAVELENGTH WAVEGUIDE COMPONENTS, by Robert J. Coates and Sara F. Rogers. U. S. Naval Research Laboratory. Jun 1950. 17p photos Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 101799

The electroforming process offers a means of fabricating small parts, such as wave-guide components, where precise inside dimensions are desired. Methods are discussed for making the electroform on a suitable mandrel having the inside dimensions of the piece to be made. By plating to the desired thickness on this mandrel, which is subsequently removed, the desired piece is readily made. Information is given on the composition of the solution and on operating conditions of the electroforming baths. NRL R 3673.

FULL-SCALE AIRCRAFT ANTENNA MEASUREMENTS, TECHNICAL REPORT, by J.V.N. Granger and N. G. Altman. Harvard University. Cruft Laboratory. Feb 1949. 29p photos, diagrs, graphs Mi $2.00, Ph $3.75. PB 101961

A full-scale SNJ-4 two-place training airplane was mounted on top of a 30-foot wooden tower as a compromise solution to the problem of obtaining antenna measurements while avoiding time-consuming and costly flights. The difficulty in predicting the effect of the earth's proximity on antenna measurements is pointed out, and it was demonstrated this problem is best solved by investigating the effect of a perfectly conducting earth on the input impedance of a short dipole, either horizontal or vertical, located at an arbitrary distance above it. Measures taken to overcome the vibration caused by the motor generator are discussed. A description is given of the impedance measuring equipment. Data are presented which indicate the usefulness of the full scale aircraft set-up as a research tool. Contract N5ori-76, Task order no. 1. NR-078-011. HU CL TR 63.

INSULATION AND OVER-VOLTAGE PROBLEMS IN LOW VOLTAGE NETWORKS, by Bror Sollergren and Nils Hyltén-Cavallius. 1950. 46p diagrs, graphs, tables Mi $2.50, Ph $6.25. PB 101758

The importance of the insulation and over-voltage problem in low voltage networks. Flash-over voltage tests on various types of spark gaps with clearances corresponding to normal airgaps in low voltage installations. Tests have further been made on tracking paths on bakelite and on typical insulation details, such as kWh-meters, electric hot-plates and conductors. Also some test data for low voltage surge diverters are included. Conclusions regarding overvoltage protection. The errors of measurement in oscillographic recording of chopped low voltage surges of short duration ($< 1\ \mu s$) are treated in detail, and suitable test circuits have been worked out and are described. Acta polytechnica no. 57, 1950. Electrical engineering series Vol. 2, nr. 8.

TECHNISCHE DATEN DER VON LORENZ ENTWICKELTEN UND GEFERTIGTEN RÖHREN (RADIO VALVES DEVELOPED AND PRODUCED BY LORENZ). Lorenz, C., A. G., Berlin. Mar 1946. 27f (Text in German) Mi $2.00, Enl Pr $5.00. PB 102263

1. Vacuum tubes - Germany 2. Micro BIOS/DOCS/Dutch 3022/2352 3. Micro BIOS FD 4410/47, Frames 1-26.

Abstract available as PB 102263s. 1p. Mi $1.25, Ph $1.25.

TRANSIENT ELECTRICAL CHARACTERISTICS OF LEAD-ACID SUBMARINE BATTERIES, by B. G. Bingham. U. S. Naval Research Laboratory. Jun 1950. 25p diagrs, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 102174

The transient characteristics of submarine cells have been studied to determine the importance and order of magnitude of such factors as effective internal resistance, internal voltage, and recovery voltage. These factors have been determined quantitatively for various operating conditions and for step loads up to short circuit on the battery. The results of the investigations reveal the importance of overvoltage which exists during charging and the contribution it makes to short-circuit currents. Data is also presented to show the variation of internal resistance for all battery conditions. NRL R 3703.

FOOD AND KINDRED PRODUCTS

CLOSTRIDIUM BOTULINUM IN CANNED BREAD. SAFETY TESTS ON CANNED BREAD INOCULATED WITH SPORES OF CLOSTRIDIUM BOTULINUM, REPORT OF TESTS FOR 18 MONTHS INTERVAL, by Dr. Gail M. Dack and Jaon L. Kadavy. U. S. Quartermaster Food and Container Institute. Committee on Food Research. Jun 1950. 3p tables Mi $1.25, Ph $1.25. PB 101809

No. C. botulinum toxin was present in the cans of bread stored for 0, 1, 2, 4 weeks, 3, 6, and 12 months. Results of the present tests conducted in the same manner as described in previous reports show that there was no toxin present in the cans of bread stored for 18 months. The results are listed in Tables I and II. QMC FCI Contract no. W11-183-qm-5799 Report no. 9.

CONSTRUCTION OF A MILK CABINET AND COOLER, by James S. Englund, Homer J. Dana and Paul K. Fanning. Washington. State College of Washington. Agricultural Extension Service, Pullman, Washington. 1950. 28p photos, drawings, tables Available free from State College of Washington, Engineering Experiment Station, Pullman, Washington PB 101882

The following are covered: Introduction, storage cabinet construction (size, general construction, tubing duct, vapor seal, insulation and doors), the milk can caddy-cart, the refrigeration system (the direct expansion method and equipment needed), stored refrigeration method, costs and operating costs. Tables, diagrams, drawings and photographs are included. Engineering Experiment Station Bulletin no. 74. Also issued as Agricultural Extension Service Bulletin no. 425.

EXPERIMENTS ON THE CORNISH PILCHARD FISHERY IN 1947-48, by William C. Hodgson and Ian D. Richardson. Gt. Brit. Ministry of Agriculture and Fisheries. 1949. 32p photos, diagrs, map, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 102014

1. Fishing industry - Gt. Brit.

Fishery investigations, Series II, Vol XVII, no. 2. S.O. Code no. 24-52-17-2.

EXPERIMENTS ON THE VALUE OF WOOD YEAST TORULA UTILIS AS AN AQUATIC FERTILIZER, by C. F. Jackson. New Hampshire. University. Engineering Experiment Station, Durham, N. H. Sep 1950. 9p table Available from Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 102128

1. Fertilizers and manures, Aquatic 2. Torulopsis utilis 3. Yeast, Torula - Nutritive properties 4. Yeast, Food.

Engineering publication no. 10. Reprint from Vol. 79, Trans. American Fisheries Society, Aug 1950.

LITERATURE SEARCH ON THE PRESERVATION OF FOOD BY FREEZING, BY B. H. WEIL AND FRANCES STERNE. JOINTLY SPONSORED BY THE STATE ENGINEERING EXPERIMENT STATION AND THE TENNESSEE VALLEY AUTHORITY. Georgia Institute of

Technology. State Engineering Experiment Station, Atlanta, Ga. Jun 1946. 450p Available from State Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Ga. $4.00. PB 101807

This search on the quick freezing of fruits, vegetables, juices, meat, poultry, seafoods, fish and precooked foods was prepared in connection with the food preservation research program of the Georgia State Engineering Experiment Station. It contains more than two thousand literature and patent abstracts, and serves as an indexed, expanded bibliography of the pertinent literature, so that future research might benefit through use of and acquaintance with existing data. It is believed that most of the pertinent references have been included; however, despite its size, no attempt was made to make this search utterly exhaustive. Special report no. 23. For supplement see PB 101807s.

LITERATURE SEARCH ON THE PRESERVATION OF FOODS BY FREEZING, FIRST SUPPLEMENT, JAN 1946-JUL 1947, BY BETTY ANDERSON AND B. H. WEIL. JOINTLY SPONSORED BY THE STATE ENGINEERING EXPERIMENT STATION AND THE TENNESSEE VALLEY AUTHORITY. Georgia Institute of Technology. State Engineering Experiment Station, Atlanta, Ga. Jan 1948. 284p Available from State Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Ga. $3.00. PB 101807s

This first supplement to the Literature Search on the Preservation of Food by Freezing, PB No. 101807, which covers the period from January 1946 to July 1947 inclusive, contains new and pertinent literature and patent abstracts. All phases of food freezing are covered, including the freezing of milk, eggs, and other dairy products. Special report no. 25.

PERSONALITY ALTERATION DURING REDUCED CALORIC INTAKE UNDER SURVIVAL CONDITIONS IN THE SUBARCTIC, by Ernest L. McCollum. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Aug 1950. 59p graphs Mi $2.75, Ph $7.50. PB 102010

This study reports the psychological aspects of a ration study made in Alaska in Jan. 1950. One group (I) of subjects subsisted for 10 days upon 1800 calories of food and 1000 cc of water per day. The other group (II) was limited for the same period of time to 475 calories and 1000 cc of water per day. The case study method of reporting was used, and no attempt was made to drawdefinite conclusions from the data. AAF AAL Proj. 21-01-025.

ROLE OF STARCH IN BREAD STALING, by W. F. Geddes and C. W. Bice. Nov 1946. 117p tables Mimeo; $3.00. PB 89296

1. Bread - Preservation - Germany 2. Bread staling - Germany 3. Starch - Germany 4. QMC 17-10.

WOOD YEAST AS A FEED FOR LIVESTOCK, by E. G. Ritzman. New Hampshire. University. Engineering Experiment Station, Durham, N. H. Aug 1948. 35p photos, tables Available from the Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 101836

1. Cattle - Feeding 2. Yeast, Food - Production.

Cover date is Sep 1948. Engineering publication no. 7.

FUELS AND LUBRICANTS

AIRCRAFT MATERIAL SPECIFICATION. GRAPHITED GREASE. Gt. Brit. Ministry of Supply. May 1950. 8p drawings Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 101879

1. Greases - Graphite content - Gt. Brit. 2. MS DTD MS 806.

Superseding DTD 582.

ANALYTICAL METHODS FOR DETERMINING SOLUBILITY OF WATER IN HYDROCARBONS, by Bernard Rubin and Robert J. Burger. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. May 1950. 25p photos, graphs, tables Mi $2.00, Ph $3.75. PB 101791

1. Hydrocarbon oils - Water content 2. Fuels, Aviation - Water content 3. AAF TR 5944.

BERICHT ÜBER DIE UNTERSUCHUNG VON 9 DEFINIERTEN ÖLEN DES AMMONIAKWERKES MERSEBURG. (EXAMINATION OF NINE DEFINED OILS FROM AMMONIAKWERK MERSEBURG). Dresden. Technische Hochschule. Laboratorium für Schmierungs- und Lagerforschung. Feb 1945. 26f drawings, graphs (Text in German) Mi $2.00, Enl Pr $5.00. PB 102072

1. Lubricating oils - Tests - Germany 2. Lubricating oils - Testing equipment - Germany 3. Micro BIOS FD 2876/46, Item 54, Frames 1-26.

Abstract available as PB 102072s. 2p. Mi $1.25, Ph $1.25.

BEWERTUNG VON KRAFTSTOFFEN AUF IHRE NEIGUNG ZUR DAMPFBLASENBILDUNG (DETERMINATION OF THE VALUE OF FUELS BY THEIR INCIDENCE TO VAPOR PRESSURE), by O. Widmaier. Stuttgart. Technische Hochschule. Forschungsinstitut für Kraftfahrtwesen und Fahrzungmotoren. Feb 1944. 23f photos, diagrs, graphs, tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 101723

1. Fuels - Vaporization - Germany 2. Vapor pressure - Germany 3. Micro BIOS FD 2876/46, Item 90, Frames 1-22.

CALORIFIC CLASSIFICATION OF NEW ZEALAND COALS. New Zealand. Dept. of Scientific and Industrial Research. Dominion Laboratory, Wellington, N. Z. Jul 1948. 10p tables Mi $1.25, Ph $1.25. PB 101886s4

1. Coal - Calorific values - New Zealand.

CATALYSTS FOR THE PRODUCTION OF STYRENE. CATALYSTS FOR THE PRODUCTION OF ETHYLENE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 187f (Text in German) Mi $6.75, Enl Pr $22.50. PB 101724

1. Ethylene - Catalysts - Germany 2. Ethylene - Production - Germany 3. Styrene - Catalysts - Germany 4. Metals, Precious - Recovery - Germany 5. Micro BIOS FD 2088/47, Frames 1-182.

Abstract available as PB 101724s. 4p. Mi $1.25, Ph $1.25.

DETERMINATION OF CARBON DIOXIDE IN MINE DUSTS CONTAINING CARBONATES, by A. J. Hugill and R. E. Colby. New Zealand. Dept. of Scientific and Industrial Research. Dominion Laboratory, Wellington, N. Z. Jan 1948. 4p drawing, table Mi $1.25, Ph $1.25. PB 101886

1. Coal dust - Analysis - New Zealand 2. Carbon dioxide - Determination in mine dusts - New Zealand.

Coal survey report no. 190.

GRAPHS, NOTES AND TABLES RELATING TO THE KNOCK TESTING OF FUELS. I. G. Farbenindustrie A. G., Merseburg Ammonia Works, Leuna, Ger. 1938-1939. 6f graphs, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102148

1. Fuels, Aviation - Knocking - Germany 2. Micro BIOS FD 2876/46, Item 100, Frames 1-6.

Abstract available as PB 102148s. 1p. Mi $1.25, Ph $1.25.

INFLAMMABILITY OF COAL DUSTS (SECOND REPORT), by A. J. Hugill. Gt. Brit. Dept. of Scientific and Industrial Research. Dominion Laboratory, Wellington, N. Z. Feb 1948. 2p table Mi $1.25, Ph $1.25. PB 101886s

1. Coal dust - Inflammability - New Zealand.

Coal survey report no. 192. For 4th-5th see PB 101886s2 and s3.

INFLAMMABILITY OF NEW ZEALAND COAL DUSTS (FOURTH REPORT), by J. O. Elphick and A. J. Hugill. New Zealand. Dept. of Scientific and Industrial Research. Dominion Laboratory, Wellington, N. Z. Mar 1948. 6p Mi $1.25, Ph $1.25. PB 101886s2

1. Coal dust - Inflammability - New Zealand.

Coal survey report no. 197. For 1st and 5th see PB 101886s and s3.

INFLAMMABILITY OF NEW ZEALAND COAL DUSTS (5TH REPORT), by A. J. Hugill. New Zealand. Dept. of Scientific and Industrial Research. May 1948. 14p Mi $1.75, Ph $2.50. PB 101886s3

1. Coal dust - Inflammability - New Zealand.

Coal survey report no. 201. For 1st and 4th see PB 101886s and s2.

JAHRESBERICHT (ANNUAL REPORT) RAFFINERIE FLORISDORF 1939-1943; WERK REISHOLZ 1939-1943. PT. II. Rhenania-Ossag Mineralölwerke A. G., Hamburg, Ger. 1940-1944. 389f graphs, tables (Text in German) Mi $9.00, Enl Pr $51.25. PB 101726

1. Lubricating oils - Production - Germany 2. Mineral oils - Production - Germany 3. Petroleum products - Germany 4. Micro BIOS FD 2876/46, Items 1-21, Frames 005706-006369.

For Pt. I see PB 101725.

JAHRESBERICHT (ANNUAL REPORT) WERK FREITEL 1940-1943. PART I. Rhenania-Ossag Mineralölwerke A. G., Hamburg, Ger. 1940-1944. 669f graphs, tables (Text in German) Mi $9.00, Enl Pr $87.50. PB 101725

1. Lubricating oils - Production - Germany 2. Mineral oils - Production - Germany 3. Petroleum products - Germany 4. Micro BIOS FD 2876/46, Items 1-21, Frames 006370-006729.

For pt. II see PB 101726.

K TEORRI RASPROSTRANENIA DETONATSII V GASOOBRAZNYKH SISTEMAKH. (ON THE THEORY OF THE PROPAGATION OF DETONATION IN GASEOUS SYSTEMS), by Y. B. Zeldovich. Nov 1950. 50p graphs, tables Mi $2.50, Ph $6.25. PB 102036

The existing theory of detonation is examined. It is shown that considerations with which the steady value of the velocity of detonation is chosen are not convincing. In connection with the problem of the process of the objections raised against the conceptions of Le Chatelier and Vieille of the 19th century with regard to the ignition of the gas by the shock wave are refuted. Translation from Zhurnal experimentalnoi i teoreticheskoi fiziki, T. 10, 1940, p. 542-568. NACA TM 1261.

PHTHALOCYANINE LUBRICATING GREASES, by V.G. Fitzsimmons, R. L. Merker, and C. R. Singleterry. U. S. Naval Research Laboratory. May 1950. 25p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 101873

A series of novel greases has been prepared from silicones, "Ucons", petroleums, diesters, and halocarbons gelled with 20 to 30 percent by weight of phthalocyanine pigment. The resulting greases show no dropping point below 350° C and display remarkable stability with respect to heat and atmospheric oxidation. They exhibit low bleeding and evaporation rates and are water resistant. Phthalocyanine greases have been prepared which function satisfactorily as ball-bearing lubricants at temperatures as high as 225° C. These greases are recommended for applications requiring continuous lubrication for long periods at elevated temperatures or where relubrication intervals must be extended beyond the time considered safe for storage with conventional soap-gelled greases. NRL R 3672.

PRODUCTION OF WOOD GAS AS A DOMESTIC FUEL, PRELIMINARY REPORT, by R. A. Caughey. New Hampshire. University. Engineering Experiment Station, Durham, N. H. Jun 1942. 10p drawings, tables Available from the Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 101834

1. Fuels, Wood gas 2. Wood gas - Use as fuel.

One drawing (Sketch 1) will not reproduce well.

PRODUKTIONS UND VERSANDLEISTUNGEN GEFOLGSCHAFTSSTAND ZUFUHREN UND ABLIEFERUNG ROHÖLÜBERSICHT, BERICHT, JUN 1943, JUL 1944 (PRODUCTION AND TRANSPORTATION COSTS, SUPPLIES AND DELIVERIES OF CRUDE OIL. MONTHLY REPORTS FOR JUNE 1943 AND JULY 1944). Rhenania-Ossag Mineralölwerke A.G., Hamburg, Ger. 1942-1944. 59f tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 101596

1. Petroleum - Production statistics - Germany 2. Micro BIOS FD 2876/46, Items 22-24, Frames 6730-6789.

PROPOSED RESEARCH PROGRAMS ON MILLING, BORING, CUTTING, ETC. NOTES ON CUTTING OILS. TESTS EXECUTED DURING THE WER. UNIFORM TEST CONDITIONS. Munich. Technische Hochschule 1944-1946. 30f (Text in German) Mi $2.00, Enl Pr $5.00. PB 102108

1. Research - Germany 2. Lubricating oils - Production - Directories - Germany 3. Ho (Trade name) 4. Lathe tools - Tests - Germany 5. Micro

BIOS FD 4210/47, Frames 1-19+9.
Abstract available as PB 102108s. 2p. Mi $1.25, Ph $1.25.

RICH MIXTURE SUPERCHARGED KNOCK TESTS OF PURE COMPOUNDS, by A. E. Felt, M. W. Manchester, S. D. Heron. Ethyl Corporation. Aeronautical Research Dept., Detroit, Mich. Sep 1942. 22p graphs Mi $2.00, Ph $3.75. PB 101794

The 17.6 engine has been operated for over 500 hrs at 900 rpm in connection with the supercharged knock testing of pure compounds and aviation fuels of current interest. As a result of the preliminary studies, it was decided that the 900 rpm 20° spark method was reasonably adequate for preliminary determination of rich-mixture properties. Knock-test data on C.F.R. S reference fuel, di-isobutylene, cyclohexane, triptane, neohexane, benzene, toluene, ethyl benzene, hot acid octane, and di-isopropyl are presented in graphical form. Report .o. A.R. 53. Serial no. 5. Contribution to American Petroleum Institute research project, Ohio State University Research Foundation, Columbus, Ohio.

SET-UP OF PLANT FOR TOLUENE PRODUCTION; OPERATIONAL DETAILS RELATING TO CURRENT PRODUCTION OF SYNTHETIC PETROLS, LUBE OILS, AND WAXES. PART I. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1944. 761f diagrs, graphs, tables (Text in German) Mi $9.00, Enl Pr $101.25. PB 101927

1. Toluene - Production - Germany 2. Gasoline, Synthetic - Production - Germany 3. Lubricating oils, Synthetic - Manufacture 4. Waxes, Synthetic - Production - Germany 5. Micro BIOS FD 184/47, Frames 1-749.

English abstract included. For part II see PB 101928.

SET-UP OF PLANT FOR TOLUENE PRODUCTION; OPERATIONAL DETAILS RELATING TOCURRENT PRODUCTION OF SYNTHETIC PETROLS, LUBE OILS, AND WAXES. PART II. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1944. 558f (Text in German) Mi $9.00, Enl Pr $72.75. PB 101928

1. Micro BIOS FD 184/47, Frames 750-1301.

English abstract included in PB 101927. For part I see PB 101927.

STUDIES ON THE SYNTHETIC LUBRICANT OILS IN THE DIVISION OF HIGH-PRESSURE EXPERIMENTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Aug 1948. 12p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 97907s6

Methods of synthesizing lubricant oils developed in the I. G. Farben High-Pressure Experimental Division are discussed. The chlorine method of lubricant-oil synthesis is described, and percent yields of various oils are listed. The paraflow synthesis and its application to the production of lubricant oils with low solidification points (from -10° to -30°C) are outlined. The synthesis of lubricant oils from propylene by polymerization with $AlCl_3$ is also described. The properties of propylene oils are given, as well as the results of engine tests. Cover date is Aug 1950. FIAT FR 1249, part 6.

SURFACE CHEMICAL PHENOMENA IN LUBRICATION, by J. E. Brophy and W. A. Zisman. U. S. Naval Research Laboratory: Jun 1950. 29p photos, drawings, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 101874

Many of the basic problems encountered in lubrication concern surface-active compounds and their influence on friction, wear, and wetting at the interface between metals and nonaqueous liquids. These problems involve: (1) Physical adsorption and desorption as affected by temperature, solubility, structure and concentrations of polar compounds; (2) surface chemical reactions such as catalysis or corrosion at the surface of solids; (3) the colloidal behavior of polar molecules in nonaqueous liquids; and (4) the generation of surface-active compounds within the liquid phase by reactions such as oxidation, pyrolysis, or hydrolysis. Selected data from recent research on adsorption, corrosion, rust inhibition, oxidation, friction, and wear were analyzed and, where possible, used to clarify the above four problems. NRL R 3680.

INSTRUMENTS

COHERENT DETECTOR, by David Middleton and Richard M. Hatch, Jr. Harvard University, Cruft Laboratory. Jul 1949. 95p graphs, tables Mi $4.25, Ph $12.50. PB 102183

The coherent detector which is a device for measuring sinusoidal signals of known frequency and phase in the presence of a noise background is described. The detector system is essentially a balanced modulator, employing an intense injected carrier of the same frequency as the desired signal, and in fixed phase with it. A typical scheme utilizing the coherent detector in microwave or radio-frequency measurements is shown and explained. Some factors governing detector performance are outlined, and the performance of the coherent detector is compared with that of the half-wave linear detector. A detailed theoretical analysis is made of the coherent detector system, and practical problems involved in the operation of the system are discussed. Contract N5 ori-76. Task order no. 1. NR-078-011. HU CL TR 80.

COMPLETION OF THE DEVELOPMENT OF THE SKIATRON CATHODE RAY TUBE FOR PROJECTION INDICATOR, by A. P. Borman and L. E. Swedlund. Radio Corporation of America. Victor Division, Lancaster, Pennsylvania. Jul 1945. 14p diagrs, graphs Mi $1.75, Ph $2.50. PB 101803

This is the concluding report on this development project. It covers the period May 1, 1944 to May 1, 1945. The principal problems were those concerned with standardizing the design and preparing performance specifications. A number of minor problems came up during early production and early equipment tests which required changes and revisions of the design. Laboratory report 9-C. OSRD Contract NDCro-150, Progress report no. IV. Development work on Lancaster project work order no. 13001. Cathode ray tube division, Lancaster Engineering Department. NDRC 14-492.

MACHINERY

CATALOGUES, DRAWINGS AND LIST OF PATENTS, RELATING TO MACHINERY FOR FOOD PRODUCTION, ESPECIALLY BREAD AND BISCUITS. Werner & Pfleiderer, Stuttgart, Ger. 1945. 152f photos, drawings (Text in German) Mi $6.00, Enl Pr $21.25. PB 101580

1. Food machinery - Germany 2. Food machinery - Patents - Germany 3. Micro BIOS FD 5284/47, Frames 1-121.

Abstract available as PB 101580s. 1p. Mi $1.25, Ph $1.25.

EXPERIMENTS FOR THE DETERMINATION OF THE GAS FLOW IN OPEN HEARTH STEEL FURNACE OPERATIONS, by J. Hundhausen. Vereinigte Stahlwerke A. G., Düsseldorf, Ger. 1939. 11f photos (Text in German) Mi $1.75, Enl Pr $3.75. PB 101938

1. Open hearth furnaces - Germany 2. Micro BIOS FD 1856/49, Frames 1-8.

Abstract available as PB 101938s. 1p. Mi $1.25, Ph $1.25.

FERROPRINTS RELATING TO A HYDRAULIC SHEET METAL STRETCHING MACHINE. Hydraulik G.m.b.H., Duisburg, Ger. 1936. 20f drawings only (Legends in German) Mi $1.25, Enl Pr $1.50. PB 101737

1. Sheet metal - Manufacture - Germany 2. Stretching machines (Metals) - Germany 3. Micro BIOS FD 5265/47, Frames 1-5.

Abstract available as PB 101737s. 1p. Mi $1.25, Ph $1.25.

FERROPRINT RELATING TO MINING MACHINERY Esch-Werke Maschinenfabrik & Eisengiesserei, Duisburg, Ger. 1937. 8f drawings only (Legends in German) Mi $1.25, Enl Pr $2.50. PB 101749

1. Mining machinery - Design - Germany 2. Micro BIOS FD 5475/47, Frame 1.

Abstract available as PB 101749s. 1p. Mi $1.25, Ph $1.25.

GRINDING AND LAPPING OF HARD METAL AND DIAMOND TOOL. PERFORMANCE OF SUBSTITUTES FOR DIAMOND TOOLS. Osram G.m.b.H., Berlin. 1939-1943. 30f photos, drawings, tables Mi $2.00, Enl Pr $5.00. PB 101544

1. Tools, Cutting - Hard facing - Manufacture - Germany 2. Diamond tools - Substitutes - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11482 5. Micro BIOS HEC 11477 6. Micro BIOS HEC 11487 7. Micro BIOS FD 782/48, Frames 1-26.

English abstract included. Listed in BIOS FR 925, appx. I, p. 46-47. Includes article by Dr. Dawihl reprinted from Maschinenbau, 1942, no. 6, which gives references to literature on performance of substitutes for diamond tools from 1932-1942.

DIE GÜNSTIGSTE GESTALT DER KOHLKEHLEN BEI VERDREHBEANSPRUCHTEN WELLEN. (CORRECT DESIGN OF FILLETS ON SHAFTS SUBJECTED TO TORSIONAL STRESS), by H. Deutler and A. Havers. Aug 1950. 26p photos, diagrs, graphs, tables Mi $2.00, Ph $3.75. PB 101728

1. Fillets - Design 2. Shafts - Stresses 3. STS 94.

From Institut für Triebwerk-Mechnik, Deutsche Versuchsanstalt für Luftfahrt, E.V., Berlin. 15 Jun 1937. Science Translation Service. Translation no. 388.

MAKING STUDIO ELECTRIC KILNS, by Laurance E. Webber. New Hampshire. University. Engineering Experiment Station, Durham, N. H. Dec 1947. 27p photos, fold drawings, tables Available from the Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 101835

1. Kilns, Electric - Construction.

Engineering publication no. 4.

RING ROLLING MILL FOR BALL BEARINGS. Kreuser A., G.m.b.H., Dortmund, Ger. 1944. 83f drawings only (Legends in German) Mi $3.75, Enl Pr $12.50. PB 101748

1. Ball bearings - Manufacture - Germany 2. Rolling mills - Design - Germany 3. Micro BIOS FD 5263/47, Frames 1-19.

Abstract available as PB 101748s. 2p. Mi $1.25, Ph $1.25. Drawings are listed in BIOS FR 527, appx. A.

SOME INNOVATIONS IN EQUIPMENT FOR SCALING HIGH ROOFS AND MINE WALLS, by Brinton C. Brown, Fred D. Wright and Homer J. Ballinger. U. S. Bureau of Mines. Oct 1950. 23p photos, drawings (2 fold) Mi $2.00, Ph $3.75. PB 102038

This paper describes the methods and equipment developed at the Bureau's Experimental Oil-Shale mine near Rifle, Colo., for placing men in position to scale loose rock from the walls, pillars, and roofs of high stopes or rooms. The equipment developed has application not only in oil-shale mining but in most of the country's underground limestone mines and in the exploitation of other mineral deposits mined in high stopes by room-and-pillar methods. BM RI 4739.

TUBE BENDING AND DRAWING MACHINES. Deutsche Röhrenwerke A. G., Mülheim, Ger. 1945. 18f drawings (Legends in German) Mi $1.75, Enl Pr $3.75. PB 101736

1. Tubes - Bending - Germany 2. Tubes - Drawing - Germany 3. Machinery - Design - Germany 4. Micro BIOS FD 5264/47, Frames 1-5.

Abstract available as PB 101736s. 1p. Mi $1.25, Ph $1.25.

UNTERSUCHUNGEN ÜBER DAS KOLBENRINGVERKLEBEN IM SIEMENS ÖLPRÜFMOTOR BEI VERWENDUNG-VON LEICHTMETALLKOLBEN (TESTS OF DURABILITY OF PISTON-RINGS IN THE SIEMENS OIL-TEST-MOTOR IN USE OF LIGHT METAL PISTON RINGS), by H. Schökel. Deutsche Versuchsanstalt für Luftfahrt E.V., Institut für Betriebsforschung, Berlin. Aug 1948. 6f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 101591

1. Piston rings - Tests - Germany 2. ZWB UM 552 3. Micro BIOS FD 2876/46, Item 45, Frames 210-213.

UNTERSUCHUNGEN ZUR EMISSION VON AUSPUFFGASEN IM NAHEN ULTRAROTEN ZWISCHEN 1 UND 3 MIKRON (INVESTIGATION OF EMISSION OF EXHAUST GASES IN THE NEAR INFRARED BETWEEN 1 AND 3 MICRONS), by J. Kreuzer. Jul 1948. 12p graphs, tables Mi $1.75, Ph $2.50. PB 101840

The radiation by exhaust gases of wavelengths in the infrared between 1 to 3 microns was investigated.

Measurements were made on exhaust gases of aircraft engines and various heated gas mixtures in the laboratory. Results are presented on spectral distribution, source, and absolute intensity, as well as transition between absorption and emission. Translation from Zentrale für wissenschaftliches berichtswesen (ZWB/FEH/1006) (R-3231 F-432). Institut für Physikalische Chemie der Universität Freiburg. Bericht no. 1006, Jan 1944. AAF T-2 T/1844.

UNTERSUCHUNG ZYLINDRISCHER GLEITLAGER FÜR HOHE DREHZAHL (TESTS ON HIGH SPEED CYLINDRICAL FRICTION BEARINGS), by W. Dollhopf and H. Stephan. Part I. Jul 1950. 67p drawings, graphs, tables Mi $3.00, Ph $8.75. PB 101720

The operating characteristics of various shaft and bearing materials were studied by tests on friction bearings operating at 10,000 to 14,000 rpm. Friction loss and oil consumption of the bearings, temperature distribution over the friction surface of the bushing as well as displacement of the shaft in the bearing were determined. Interpretation of the results on the basis of hydrodynamic bearing theory provides data for the calculation of high speed bearings. This work was sponsored by the German Aeronautical Research Institute (Deutsche Versuchsanstalt für Luftfahrt, E.V.), 15 Aug 1939. Science Translation Service. Translation no. 387. STS 93.

WÄRMEÜBERGANG UND WÄRMEVERLUST BEIN SCHMIEDEN UND PRESSEN (HEAT TRANSMISSION AND LOSS IN FORGING AND PRESSING), by Werner Lueg and Anton Pomp. Kaiser Wilhelm Institut für Eisenforschung, Düsseldorf, Ger. 1941. 19f photo, diagr, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 101911

1. Heat - Transmission - Germany 2. Micro BIOS FD 793/47, Frames 1-19.

Mitteilungen jahrg 23, lfg. 8 abhandlung 416-417. Also contains article by Lueg on heat transmission number. Abstract available as PB 101911s. 2p. Mi $1.25, Ph $1.25.

MEDICAL RESEARCH AND PRACTICE

COMPARISON OF ORTHO-RATER AND SIGHT SCREENER TESTS OF HETEROPHORIA WITH STANDARD CLINICAL TESTS, by Louis L. Sloan and William M. Rowland. Johns Hopkins University. Wilmer Ophthalmological Institute. n.d. 22p diagr, tables Mi $2.00, Ph $3.75. PB 101482

This study is part of a general investigation of the reliability and validity of measures of visual functions provided by the above named instruments. One phase of the general investigation is concerned with the evaluation of such devices for use in selection tests to determine fitness for particular occupations. The present study is devoted to this phase of the problem, and seeks to determine how closely the Ortho-Rater and Sight-Screener agree with standard clinical tests of heterophoria, in particular with reference to their use as selection tests. Tables and graph attached. Contract N60NR243-7, Project NR141-526.

CONSPECTUS OF JAPANESE RESEARCH IN ENVIRONMENTAL PHYSIOLOGY AND CLOSELY RELATED FIELDS, COMPILED by Yasu Kuno, Hisato Yoshimura, Unishi Miuri and Kohei Ogata. Supreme Commander for the Allied Powers. Economic and Scientific Section. Scientific and Technical Division. Jun 1950. 246p Mi $9.00, Ph $31.25. PB 101704

Contents: A. Bibliographies on high and low temperatures, 1919-1942. p. 2-73. B. Bibliographies on seasonal changes, 1943-1949. p. 74-117. - C. Bibliography on clothing, 1926-1945, by Professor Ogata, 1926-1945, p. 118-145. - D. Research reports on seasonal physiology, 1942-1948, (also parts of 1938, 1939, 1940, 1941), edited by Professor H. Yoshimura, p. 146-199. This report is divided into 3 sections: I. Bibliography of Japanese research in environmental physiology and related fields. II. List of research projects of the physiological reactions to seasonal variations committee, Med. Dept., National Research Council, Ministry of Education III. Appendix. SCAP ESS R 21.

DAS PROBLEM DER ENTMARKUNGSENZEPHALOMYELITIDEN IN DYNAMISCHER BETRACHTUNG. (DISSEMINATED AND PARA-INFECTIOUS ENCEPHALOMYETIS), von H. Pette. U. S. Field Information Agency, Technical. Jun 1949. 28p (Text in German) Mi $2.00, Ph $3.75. PB 97441

1. Encephalomyelitis, Disseminated - Germany 2. FIAT FR 1256.

Aus der Neurologischen Universitäts-Klinik, Hamburg-Eppendorf. Direktor: Prof. Dr. Pette.

HUMAN APPETITE, BY FRANZ R. GOETZL. REPORT NO. 13 ON CONTRACT NO. W11-183-QM-8133, JUL 1949-JUN 1950. U. S. Quartermaster Food and Container Institute. Committee on Food Research. Jun 1950. 15p Mi $1.75, Ph $2.50. PB 101808

The experiments briefly described were conducted and initiated during the period from July 1949 to June 1950. They represent a continuation of previous studies on "Human Appetite". Gustatory thresholds for the taste qualities other than sweet are determined in normal individuals at different times of the day on days on which freely selected meals are ingested and on days on which noon meals are omitted. The study is not completed. Bibliography attached.

NEUROCIRCULATORY COLLAPSE AT ALTITUDE, by Harry F. Adler. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Special project. Jun 1950. 53p diagr, tables Mi $2.75, Ph $7.50. PB 101698

The following data are given: I. Classification of cases II. Incidence III. Symptomatology IV. Laboratory and clinical data V. Etiological mechanism VI. Prognosis of collapse cases VII. Treatment VIII. References IX. Case histories. Absts I-VII Total cases. Absts. VIII-XV Spinal puncture cases. Abst. XVI Severe case with recovery.

EYE FIXATIONS OF AIRCRAFT PILOTS V: FREQUENCY, DURATION, AND SEQUENCE OF FIXATIONS WHEN FLYING SELECTED MANEUVERS DURING INSTRUMENT AND VISUAL FLIGHT CONDITIONS, by John L. Milton, Richard E. Jones, Paul M. Fitts, with the assistance of William G. Morris. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1950. 36p photos, drawings, tables Mi $2.25, Ph $5.00. PB 101830

This report summarizes data concerning the fre-

quency, duration and sequence of eye fixations made by ten USAF pilots during straight and level flight and standard rate turns performed under simulated instrument conditions, and during take-offs and landings performed under contact conditions. From these data an optimum arrangement of instruments on the panel can be determined. For pts. I-IV see PB 99638; 100105, 100298, 100869. AAF TR 6018.

PERIPHERAL VISUAL ACUITY: A REVIEW, by Frank N. Low. Johns Hopkins University. Dept. of Anatomy. Jun 1950. 27p graphs Mi $2.00, Ph $3.75. PB 101849

The literature on the subject is reviewed. A short historical sketch is followed by graphical comparison of the quantitative results of different investigations. The numerous factors known to affect peripheral acuity are discussed with reference to the published data, as well as the poor agreement among the various investigations, and the reason for decreasing acuity in the periphery. Over 100 references are cited.

PRODUCTION OF HISTAMINE IN THE BODY DURING HYPOXIA; INFLUENCE OF ANTIHISTAMICS ON RESPIRATORY RESPONSE TO HYPOXIA, by William L. Burkhardt, Burns R. Eastman and Henry B. Hale. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Jul 1950. 5p table Mi $1.25, Ph $1.25. PB 101699

Procedure and results are given for five compounds - Pyribenzamine, Benadryl, Antistine, Dramamine, and Chlor-trimeton. AAF SAM Proj. 21-24-015 Rept. no. 3.

REPORTS ON BIOLOGICAL STANDARDS. VI. DESIGN OF TOXICITY TESTS, by W.L.M. Perry. Gt. Brit. Medical Research Council. 1950. 58p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 101696

The report covers the following: I. Introduction: The principal types of design available for toxicity tests. II. The quantal response method: The determination of characteristic curve for the standard preparation. The use of the dosage-response line of the standard preparation. The detailed designs available for quantal response assays. The combination of results of repeated assays. III. The graded response method: The development of an assay based on a graded response. Trial assays by the graded response method - (2+2) dose design. IV. Summary and conclusions. A glossary of terms, and reference included. S.O. Code no. 45-8-70. MRC SR 270.

SEMI-ANNUAL TECHNICAL PROGRESS REPORT, AERO-MEDICAL SUBCOMMITTEE, VOL. II, CASE NO. 5-3, REPORT NO. 2. JUN 30, 1950. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. 1950. 170p Mi $6.25, Ph $21.25. PB 101703

Detailed information of the active projects in the laboratory are presented as well as their progress and future plans. Reports control symbol DDRDB-3.

STUDIES ON THE INCORPORATION OF INJECTED CYTOCHROME C INTO TISSUE CELLS. II. INJECTION OF RADIOACTIVE CYTOCHROME C INTO NORMAL RATS, by Helmut Beinert, H. Maier-Leibnitz, K. R. Reissmann, E. O. Richey, Priscilla Matthews. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Aug 1950. 7p tables Mi $1.25, Ph $1.25. PB 101816

Iron labeled cytochrome with a radioactivity suitable for tracer work has been produced by biosyntheses in rats which were made anemic and then injected with radioiron during their period of rapid growth. It may be concluded that no success may be expected from the administration of other catalytic proteins. AAF SAM Proj. 21-23-001, Report no. 2.

SURVEY OF HUMAN ADJUSTMENT PROBLEMS IN THE NORTHERN LATITUDES, by Ernest L. McCollum U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Jul 1950. 52p tables Mi $2.75, Ph $7.50. PB 101689

The purpose was to discover those factors which appear to be most contributive to poor morale among those assigned to duty in these latitudes. Methods employed and findings are given. The questions in each group for each station with the findings are attached. AAF AAL Proj. 21-01-022, Program C, Phase 1-A.

USAF SAM OPHTHALMIC ERGOGRAPH: EFFECT OF ACCOMODATION CONVERGENCE EXERCISE, by Paul H. Ripple and S. B. Sells. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Jul 1950. 11p photo, diagrs, tables Mi $1.75, Ph $2.50. PB 101568

A group of 19 males (median age 19) was given a series of exercises. Each subject received from 4 to 6 half-hour exercises consisting of accommodating and converging intermittently at a target moving toward the subject. There was a total of 92 observations. Measurements were performed prior, during, and after the exercise with reference to the effects on accommodation and muscle balance. Photograph, tables, drawing, and tables are included. Bibliography attached. From the Department of Ophthalmology and Clinical Psychology. AAF SAM Proj. 21-24-005, Rept. no. 2.

USAF SAM OPHTHALMIC ERGOGRAPH; STUDIES, OCULAR FATIGUE, WITH SPECIAL REFERENCE TO THE MILITARY FUNCTIONS IN RELATION TO VISUAL TEST ENCOUNTERED IN FLYING, by Saul B. Sells and Robert B. Payne. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jul 1950. 12p photos, drawings Mi $1.75, Ph $2.50. PB 101705

This report presents a new model of an ophthalmic accommodation-convergence ergograph. It incorporates a number of revisions in its design. The design and special features are set forth. Bibliography, photographs, drawing and schematic diagram are attached. AAF SAM Proj. 21-24-005, Rept. no. 1.

VISION OF THE HUMAN EYE IN THE ULTRAVIOLET SPECTRUM, by Walter Friedrich. Aug 1950. 8p diagrs, graphs, tables Mi $1.25, Ph $1.25. PB 101700

The most important results are: (1) The eye sensitivity curve (form vision) in ultraviolet shows a steep decline at about λ=4000Å towards the short wave lengths. Values from λ =3650 Å to the visibility limit are fairly constant. (2) The visibility limit of a test group 17 to 30 yrs. lies at 3130Å. (3) Subjects up to 14 have a maximum sensitivity at λ =3130 Å. Ultraviolet rays of 3020 Å could still be seen by them. (4) Test subjects more than 50 no longer posses form vision in ultraviolet of λ = 3650 Å; only have a diffused light perception. (5) The threshold values for light perception and form vision are given in units of absolute

energy. (6) The sensitivity of the eye for the region from 3650 Å to 3130 Å in young subjects is compared to the maximal sensitivity in green. (7) Threshold values for form vision are higher than for perception of light. (8) Form vision is rendered more difficult by fluorescence. Translation form the German. U.S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Project report.

METALS AND METAL PRODUCTS

AIRCRAFT MATERIAL SPECIFICATION: ALUMINUM ALLOY CASTINGS FOR GENERAL PURPOSES. REPRINTED INCORPORATING AMENDMENTS NO. 1,2,3,4. Gt. Brit. Ministry of Supply. Jul 1950. 3p drawings, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 101957

1. Aluminium alloys - Castings - Gt. Brit. 2. MS DTD MS 424.

Basic report dated Jan 1940.

AIRCRAFT MATERIAL SPECIFICATION. NON-CORROSIVE FLUX FOR SOFT SOLDERING (EXCEPT HIGH PRESSURE OXYGEN EQUIPMENT). GT. BRIT. MINISTRY OF SUPPLY. REPRINTED JUNE 1950 INCORPORATING AMENDMENTS NOS. 1 AND 2. Jun 1950. 2p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.15. PB 101907

1. Fluxes, Soldering - Non-corrosive - Gt. Brit. 2. MS DTD MS 599.

Basic report dated Mar 1944.

AUSTENITE FORMATION DURING TEMPERING AND ITS EFFECTS ON MECHANICAL PROPERTIES, by E. F. Bailey and W. J. Harris, Jr. U. S. Naval Research Laboratory. Jun 1950. 13p graphs, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 101876

Austenite is formed during prolonged heating of a low-carbon manganese-nickel steel below the transformation temperature determined by continuous heating. The amount of austenite and its decomposition characteristics are determined by the temperature of formation and the time at temperature. Mechanical property data indicate that if this austenite decomposes during cooling, tensile ductility and impact resistance will be decreased. If the austenite is retained it will decrease yield strength and if it transforms during plastic deformation it will increase tensile strength, lower elongation and reduction of area, and reduce notch toughness. NRL R3684.

BONDING INVESTIGATION OF TITANIUM CARBIDE WITH VARIOUS ELEMENTS, by Walker J. Engel. U. S. National Advisory Committee for Aeronautics. Sep 1950. 13p photos, diagrs, tables Mi $1.75, Ph $2.50. PB 101851

Investigation of bonding titanium carbide with aluminum, beryllium, chromium, cobalt, columbium, gold, iron, magnesium, manganese, nickel, lead, platinum, silicon, titanium, or vanadium was done metallographically. These elements were individually fused on cupped, solid, high-density titanium carbide at minimum fusion temperatures in a helium atmosphere and at atmospheric pressure. Criterion of metallographic evaluation of element - titanium carbide bond in this investigation was the presence or extent of a mechanical interlocking structure or the formation of a new phase in the titanium carbide, with no consideration given to the strength of the element. Only nickel, cobalt, chromium, and silicon bonded with titanium carbide. NACA TN 2187.

CASE HARDENING PROCESSES. U. S. Bureau of Ships. Aug 1950. 10p photos, drawings, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 101904

1. Steel - Hardening, Case 2. NAVSHIPS IN 107.

CHROME-MOLYBDENUM STEELS WITH ADDITIONS OF TITANIUM, NIOBIUM, ZIRCONIUM, VANADIUM, AND URANIUM, by Dr. Wilhelm Anton Fisher. Kaiser Wilhelm Institut für Eisenforschung, Düsseldorf, Ger. May 1945. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 101935

1. Steel alloys - Creep - Tests - Germany 2. Steel alloys - Hardenability - Tests - Germany 3. Steel alloys - Mechanical tests - Germany 4. BIOS OR 15 LD 5. Micro BIOS HEC 13718 6. Micro BIOS FD 1783/49, Frames 1-2.

Abstract available as PB 101935s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 174.

CROMADUR AND TINIDUR HEAT-RESISTING STEELS. Germany. Reichsstelle für Eisen und Metalle. n.d. 17f Mi $1.75, Enl Pr $3.75. PB 101930

1. Steel, Heat resisting - Germany 2. Cromadur (Trade name) 3. Tinidur (Trade name) 4. BIOS OR 15 LD 5. Micro BIOS HEC 186 6. Micro BIOS FD 1736/49, Frames 1-16.

Abstract available as PB 101930s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 174.

DATA ON THE PRODUCTION OF SPIEGELEISEN IN GERMANY. Vereinigte Stahlwerke A. G., Düsseldorf, Ger. 1941-1943. 204f (Text in German) Mi $7.50, Enl Pr $27.50. PB 101940

1. Cast iron - Production - Germany 2. Micro BIOS FD 1862/49, Frames 1-202.

Abstract available as PB 101940s. 1p. Mi $1.25, Ph $1.25.

DRESSING OF IRON ORES FOR THE RUHR AND STEEL INDUSTRY. Vereinigte Stahlwerke A. G., Rohstoffbetriebe, Dortmund, Ger. 1937-1939. 250f (Text in German) Mi $9.00, Enl Pr $32.50. PB 101936

1. Iron ores - Preparation - Germany 2. BIOS OR 15 LD 3. Micro BIOS FD 1851/49, Frames 1-234.

Abstract available as PB 101936s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 20. Includes Mitteilungen aus dem Kaiser Wilhelm Institut für Eisenforschung, v. XX, 1938, containing two papers by W. Suyken and G. Kremer entitled Neue ergebnisse bei der magnetisierenden rõstung von brauneisenerzen (New results in the magnetizing roasting of brown iron ore), and Einfluss des chemische gebundenen wassers auf den brennstoffverbrauch bei der sinterung von eisenerzen (Influence of chemically bound water on fuel consumption in the sintering of iron ores).

EFFECT OF HOT GAS IMPINGEMENT ON STAINLESS STEEL LONGERON (APPLICABLE TO XP-86 AIR-

PLANE), by Ralph J. Price. North American Aviation, Inc. Engineering Research Laboratory, Inglewood, Calif. Jun 1946. 14p diagr, graph, table Mi $1.75, Ph $2.50. PB 101795

Two types of longeron sections, were tested to determine longeron temperatures under various conditions of hot gas impingement. A small laboratory jet, burning natural gas, was used in the test. Cooling air for the hat section longeron was supplied by a 10 in. pipe that converged to fit the section. Tensile specimens were sheared from type 302 1/2 hard stainless steel sheet, and tensile tests were conducted at temperatures from 300° to 1900°F in increments of 200 degrees. Results showed that longeron sections of 1/2 hard stainless steel withstood hot gas impingements for six minutes at temperatures to 2400°F without burning through or eroding seriously. Up to temperatures of 1100°F, the ultimate strength decreased almost linearly to about 50% of the room temperature strength while the yield strength remains approximately the same. From 1100° to 1900°F the ultimate and yield strengths both decreased linearly to approximately 5% of the room temperature values. Report no. NA-46-561.

ELECTRON MICROSCOPY OF METAL SAMPLES BY REPLICA TECHNIQUES, by L. S. Birks and R. T. Seal. U. S. Naval Research Laboratory. Jun 1950. 12p photos (1 fold) Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 102007

With the present transmission type electron microscope, the only method of observing the structure of gross metal specimens, is by the replica technique. The first part of this report is a comparison of several variations of the replica technique applied to steel specimens in an attempt to determine which gives optimum results for the work at the Naval Research Laboratory. The second part of the report describes a technique for observing exactly the same area in the electron and the light microscopes. A desired area may thus be found in the light microscope and then observed with the greater resolution and magnification of the electron microscope. NRL R 3693.

ERZEUGUNG VON EDELSTAHL NACH DEM SCHLACKENMISCHVERFAHREN (MANUFACTURE OF REFINED STEEL ACCORDING TO THE SLAG MIXING METHOD), BY EDUARD HERZOG. UEBER DAS DESOXYDIERENDE UND ENTSCHWEFELNDE SCHLACKENREAKTIONSVERFAHREN (DE-OXIDIZING AND DE-SULPHURIZING SLAG REACTION METHOD), by Otto Krifka and Franz Rapatz. Verein Deutscher Eisenhüttenleute, Düsseldorf, Ger. Sep 1944. 10f (Text in German) Mi $1.25, Enl Pr $2.50. PB 101750

1. Slag - Utilization - Germany 2. Perrin method (Steel production) 3. Steel - Manufacture - Germany 4. Micro BIOS FD 2010/48, Frames 1-10.

Abstract available as PB 101750s. 3p. Mi $1.25, Ph $1.25.

HYDRIDES OF ACTIVE METALS IN VACUUM-TUBE TECHNIQUES, by Walter Knecht. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Sep 1950. 25p photos, drawing, graphs Mi $2.00, Ph $3.75. PB 101908

Hydrides of active metals were examined in connection with the design and construction of high-vacuum tubes with the following results: The metal-to-ceramic seal made with thorium hydride seemed to be stronger than the zirconium hydride seal. In general, the hydride seal was not so strong as the press-powder seal. Use of hydrides for heater-to-cathode seals improved the operation and emission of indirectly heated oxide-coated cathodes. A new design of an indirectly heated cathode served two purposes: as emitter, and as producer of metal mirrors acting as getters while the cathode is being processed. The first experiments in preparing alloys of active metals on nickel sleeves of oxide-coated cathodes were successful. Electronic subdivision, Components & Systems Laboratory, Project no. 111-101. AAF TR 6108.

IRON-ZIRCONIUM ALLOYS AND ZIRCONIUM STEELS, by Dr. W. G. Fischer. Kaiser Wilhelm Institut für Eisenforschung, Clausthal-Zellerfeld, Ger. 1945. 2f Mi $1.25, Enl Pr $1.50. PB 101934

1. Iron-zirconium alloys - Germany 2. Steel, Zirconium - Germany 3. BIOS OR 15 LD 4. Micro BIOS HEC 13717 5. Micro BIOS FD 1782/49, Frame 1.

Abstract available as PB 101934s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 244.

LATTICE DISTORTION SPECTRUM OF EVAPORATED GOLD, by Philip G. Wilkinson. U. S. Naval Research Laboratory. Aug 1950. 14p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 101797

Gold was deposited in various pressures of nitrogen from 0.001 μ to 110 μ at low temperatures. The electrical resistance of the gold film was observed to decrease as it warmed, enabling the distribution of lattice distortions to be computed as a function of decay energy. The distortion spectrum fron 70.10^{-14} to 130.10^{-14} ergs was found to consist of three peaks - one at 80.10^{-14}, one at 100.10^{-14}, and one at 120.10^{-14} ergs. The relative number of distortions for a particular decay energy was found to decrease as the nitrogen pressure increased. The final resistivities of the gold films were shown to be dependent on the film thickness over the range 40 A to 420 A in a manner which agreed with theory and gave a value of 970 A for the mean free path of the conduction electrons. NRL R 3719.

METALLURGY OF HYDROGENATION EQUIPMENT. KETONES FROM "SUMP-PHASE" HYDROGENATION. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941-1944. 767f diagrs, tables (Text in German) Mi $9.00, Enl Pr $107.50. PB 101916

1. Steel - Creep - Germany 2. Hydrogenation - Sump phase - Germany 3. Ketones - Production - Germany 4. Micro BIOS FD 2141/46, Frames 1-759.

Abstract available as PB 101916s. 2p. Mi $1.25, Ph $1.25.

PROPERTIES AND APPLICATION OF THERMOPERM STEEL, by F. Stablein. Krupp, Friedrich, A.G. Essen, Ger. n.d. 11f diagrs Mi $1.75, Enl Pr $3.75. PB 101933

1. Steel alloys - Magnetic properties - Germany 2. Steel alloys - Thermal properties - Germany 3. Thermoperm (Trade name) 4. BIOS OR 15 LD 5. Micro BIOS HEC 13033 6. Micro BIOS FD 1774/49, Frames 1-10.

Abstract available as PB 101933s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 174.

RADIOACTIVE TRACERS IN METALLURGICAL RESEARCH, by W. S. Eastwood, W. G. Marley, H. M. Finniston and A. E. Williams. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. 1950. 57p diagrs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 101757

It is assumed that the reader has some general knowledge of the structure of the atom, and Chapter 1 describes in some detail the nature and methods of production of isotopes and the nuclear processes by which they decay to a lower energy state. The decay of radioactive isotopes is the characteristic which renders them useful as a scientific tool and Chapter 2 describes the methods for detection and counting of the nuclear changes. Chapter 3 acquaints the reader with some experimental work on metallurgical problems which have been tackled with radioactive tracers, and in the final section some possible fields in metallurgy in which tracers might find research application are suggested. Chapter 4 describes the hazards and precautions to be observed in the use of tracers. S.O. Code no. 70-623.

RESEARCH ON ZIRCONIUM ALLOYS, by Felix B. Litton and S. C. Ogburn, Jr. U. S. Air Materiel Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Ohio. Mar 1950. 37p graphs, tables Mi $2.25, Ph $5.00. PB 101975

1. Zirconium alloys 2. Foote Mineral Co., Berwyn, Pa. 3. AAF TR 5943.

SELBSTKOSTENUNTERSCHIEDE ZWISCHEN THOMAS- UND SM-STAHL (DIFFERENCES IN THE MANUFACTURING COSTS OF THOMAS AND S.M. STEELS), by Dr. Reichardt. Vereinigte Stahlwerke A. G., Düsseldorf, Ger. n.d. 26f diagr (Text in German) Mi $2.00, Enl Pr $5.00. PB 101939

1. Steel - Production costs - Germany 2. Micro BIOS FD 1860/49, Frames 1-25.

Abstract available as PB 101939s. 1p. Mi $1.25, Ph $1.25.

SHEET METAL TECHNIQUES, IMPROVEMENT IN, I. U. S. Bureau of Ships. Sep 1950. 10p photos, diagrs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25 PB 101973

1. Tools, Pressing 2. Dies, Blanking and piercing 3. Sheet metal - Manufacture 4. NAVSHIPS IN 108

SPECIFICATIONS FOR THE PHOSPHATIZING OF STEEL PARTS. Germany. Oberkommando des Heeres. 1943. 32f (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 101931

1. Steel - Phosphatizing - Germany 2. BIOS OR 15 LD 3. Micro BIOS HEC 10616 4. Micro BIOS FD 1760/49, Frames 537-544+23.

Abstract available as PB 101931s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 225.

STEEL FOR HYDROGENATION EQUIPMENT. I. G. Farbenindustrie A. G., Leuna, Ger. 1936-1945. 25f photos, graphs, table (Text in German) Mi $2.00, Enl Pr $5.00. PB 101910

1. Steel alloys - Germany 2. Damage, Bomb - Germany 3. Cylinders, Oxygen - Tests - Germany 4. Micro BIOS FD 3288/46, Frames 190000260-190000274, 190000277-190000286.

Abstract available as PB 101910s. 2p. Mi $1.25, Ph $1.25.

STEEL PRODUCTION WITH MANGANESE REDUCTION. Vereinigte Stahlwerke A. G., Düsseldorf, Ger. Mar 1932. 13f photos, graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 101937

1. Steel - Manganese content - Germany 2. Steel - Manufacture - Germany 3. Micro BIOS FD 1853/49, Frames 1-12.

Abstract available as PB 101937s. 1p. Mi $1.25, Ph $1.25.

ÜBER DIE HERSTELLUNG VON TITANKARBID AUS TITANSÄURE UND GRAPHIT (PRODUCTION OF TITANIUM CARBIDE FROM TITANIC ACID AND GRAPHITE) HERSTELLUNG VON TITANKARBID NACH DEM D.R.P. NR. 680, 566 DER I. G. FARBENINDUSTRIE (MANUFACTURE OF TITANIUM CARBIDE ACCORDING TO I. G. FARBEN PATENT NO. 680566), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jun 1937-Mar 1940. 8f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102104

1. Titanium carbide - Production - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11097 4. Micro BIOS HEC 11209 5. Micro BIOS FD 3817/47, Frames 1-8.

Listed in Bios FR 925 appx. I, p. 10 and 20.

ÜBER DIE KORROSION VON FLÜSSIGEM NATRIUM AN VERSCHIEDENEN METALLEN (ON THE CORROSIVE EFFECT OF LIQUID SODIUM ON VARIOUS METALS), by P. Pirscher. I. G. Farbenindustrie A.G., Oppau, Ger. 1942. 7f graphs, table (Text in German) Mi $1.25, Enl Pr $2.50. PB 101909

1. Metals - Corrosion - Germany 2. Sodium - Corrosive effects - Germany 3. Micro BIOS FD 349/47, Frames 27738-27744.

Kurzbericht nr. 353. Abstract available as PB 101909s. 1p. Mi $1.25, Ph $1.25.

ÜBER DIFFUSION UND LEGIERUNGSBILDUNG ZWISCHEN HARTMETALLEGIERUNGEN UNTEREINANDER UND MIT ANDEREN WERKSTOFFE, I. BERICHT (DIFFUSION AND ALLOY FORMATION BETWEEN DIFFERENT HARD METAL ALLOYS AND WITH OTHER MATERIALS. FIRST REPORT), by Dawihl and Rix. Studiengesellschaft Hartmetall, Berlin. Jan 1940. 9f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102105

1. Alloys, Hard - Diffusion - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11204 4. Micro BIOS FD 3828/47, Frames 1-7.

Abstract available as PB 102105s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 19.

METEORALOGY AND CLIMATOLOGY

PROJECT CIRRUS: FINAL REPORT ON CONTRACT NO. W-36-039-SC-32427, PREPARED by Irving Langmuir and others. General Electric Research Laboratory, Schenectady, N. Y. Dec 1948. 134p photos, drawings, graphs, tables Mi $5.50, Ph $17.50. PB 101683

1. Clouds - Formation 2. Rain and rainfall 3. GE RL 140 4. SIG Contract W-36-039-sc-32427.

Dept. of the Army Project: 3-99-07-022. Signal Corps Project 172B. Contains: Occasional report no. 1. Production of rain by a chain reaction in cumulus clouds at temperatures above freezing, by Irving Langmuir. - Occasional report no. 2. A new plane model cloud meter, by Raymond E. Falconer and Vincent J. Schaeffer. - Occasional report no. 3. Some experiments on the freezing of water, by Robert Smith-Johannsen. - Occasional report no. 4. Smoke from smelting operations as a possible source of silver iodide nuclei, by Raymond E. Falconer and Bernard Vonnegut. - Occasional report no. 5. Production of ice crystals by adiabatic expansion of gas. Nucleation of supercooled water clouds by silver iodide smokes. Influence of butyl alcohol on shape of snow crystals formed in the laboratory. - Occasional report no. 6. Variation with temperature of the nucleation rate of supercooled liquid tin and water drops. - Occasional report no. 7. Observations on the behavior of water drops at terminal velocity in air. - Occasional report no. 8. Method for obtaining a continuous record of the type of clouds in the sky during the day, by Raymond E. Falconer. - Occasional report no. 9. Detection of ice nuclei in the free atmosphere, by Vincent J. Schaefer. - Occasional report no. 10. Studies of the effects produced by dry ice seeding of stratus clouds, by Irving Langmuir.

SONIC AGGLOMERATION OF NATURAL FOG. FINAL REPORT, PART III. Ultrasonic Corporation, Cambridge, Mass. Jun 1948. 201p diagrs, drawings, graphs Mi $7.50, Ph $26.25. PB 101666

1. Fog - Sound absorption 2. Fog - Dissipation 3. Spheres, Oscillating 4. Airplanes - Landing in fog

For pt. II of Final report see PB 101674. Contains also: On the force between oscillating spheres, by R. Clark Jones. Nov 9, 1947. n.p. - Summary and recommendations, by Caperton B. Hersley and Gordon S. Seavey. 20p. Navy Department, Office of Research and Inventions. Contract number N6-ori-100, with task order I. Project designation number NR-063-23.

MINERALS AND MINERAL PRODUCTS

DRAFT MANUSCRIPT OF A WORK ON SILICATES, by W. Eitel. 1946. 196f Mi $7.00, Enl Pr $26.25. PB 102089

1. Silicates 2. Micro BIOS FD 1144/47, Frames 1-193.

Abstract available as PB 102089s. 2p. Mi $1.25, Ph $1.25. Illustrations referred to are omitted. References to Russian literature are inserted in ink, written in Russian.

MIRROR MANUFACTURE. U. S. Office of Technical Services. Sep 1950. 15p table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 101399

1. Mirrors - Manufacture.

WHITEWARE RAW MATERIAL RESOURCES OF JAPAN, by Donald E. Lee and Hideshiro Hasegawa. Supreme Commander for the Allied Powers. Natural Resources Section. 1950. 65p photos, diagrs, maps (1 fold), tables Mi $3.00, Ph $8.75. PB 101945

1. Kaolin - Production - Japan 2. Quartz glass - Production - Japan 3. Feldspar - Production - Japan 4. SCAP NRS 135.

PACKING AND PACKAGING

PACKAGING CONSUMER GOODS FOR THE CANADIAN MARKET: REPORT TO THE PRESIDENT OF THE BOARD OF TRADE, WITH A FOREWORD BY THE PRESIDENT, Harold Wilson. British Export Trade Research Organisation, London. 1950. 106p col. photos, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.75. PB 101633

This report prepared as the result of an extensive survey in Canada is intended to suggest how foreign packaging of products such as cutlery, groceries, men's wear and drug store products may be made more suitable to Canadian tastes. The survey was concerned solely with packages delivered over the counter to the purchaser and with the direct influence of such packages on sales. It was prepared after interviews with retailers and consumers, and the examination of numerous samples of Canadian packaging. Color in photos will not reproduce. S.O. Code no. 51-306.

PAPER AND ALLIED PRODUCTS

PAPER UNDER IMPACT CONDITIONS, by Olle Andersson and Börje Steenberg. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1950. 7p diagrs Mi $1.25, Ph $1.25. PB 101467

The purpose of this report is to present a theoretical basis for a study of the behaviour of paper under high rates of deformation. The present study is a preliminary work to enable an interpretation of experimental results, which will be published later on. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 50. Abstract in German and English.

PHYSICS

General

PLOSKOYE DVIZENIYE GAZA PRI BOLSHIH SVERHZVOOKOVIN SKOROSTYAH (PLANE MOTION OF A GAS AT HYPERSONIC VELOCITY), by S.V. Falkovich. 1947. 13p Mi $1.75, Ph $2.50. PB 101960

An investigation is presented which deals with the equations of plane, steady, irrotational, adiabatic flow of a gas at hypersonic velocities. In this investigation, an approximate method of integration is outlined that is sufficiently accurate for Mach numbers greater than four. By employing this method, certain criteria of similarity are determined which may be useful in interpreting experimental data obtained in wind tunnels. The Tsien criterion of similarity, valid for large Mach numbers, is obtained by a less complicated procedure. Release date, May 1949. From Applied Math.

and Mech., Vol. XI (1947) p. 459-464. Translation from the Russian by the Graduate Division of Applied Mathematics, Brown University, for United States Air Force, Air Materiel Command, Analysis Division, Intelligence Department Wright-Patterson Air Force Base, Dayton, Ohio, under contract W33-038-ac-15004 (16351). AAF TR F-TS-1221-IA (GDAM A9-T-40).

SURVEY OF RECENT LITERATURE ON THE LINEARIZED SUPERSONIC STEADY FLOW EQUATION IN THREE DIMENSIONS. PART I, by H. J. Ettlinger and M. H. Clarkson. Texas. University. Defense Research Laboratory. Apr 1948. 24p drawings Mi $2.00, Ph $3.75. PB 101962

A survey is given of investigations dealing with the flow equation for determining the aerodynamic characteristics of cones, bodies of revolution, flat plates, and double convex airfoils under supersonic conditions. The purpose of the survey is to single out the mathematical procedure used to solve the flow equation without appealing to empirical knowledge derived from experiments. The linearity of the differential equation permits the use of linear combinations of solutions by the superposition principle with the attendant evaluation of constant multipliers. CM-454. UTX-1-AA-1. This report is a CM re-issue of CF report no. 875, dated Feb 10, 1948. TU DRL 146, Part 1.

SYMPOSIUM ON AEROTHERMODYNAMICS. JOINT MEETING WITH THE FLUID DYNAMICS DIVISION OF THE AMERICAN PHYSICAL SOCIETY. U. S. Naval Ordnance Laboratory. Jun 30, 1949. Jul 1950. 105p graphs, tables Mi $4.50, Ph $13.75. PB 101768

1. Ballistics, Exterior - Research 2. Aeromechanics - Research 3. Wind tunnels, Supersonic - Research 4. Aerodynamics, Supersonic - Research 5. Thermodynamic 6. American Physical Society. Fluid Dynamics Division 7. NOLR 1134.

See also PB 101764 - PB 101767; PB 101769-PB 101770.

SYMPOSIUM ON EXPERIMENTAL COMPRESSIBLE FLOW, JUN 29, 1949. U. S. Naval Ordnance Laboratory. May 1950. 120p photos, drawings, graphs Mi $4.75, Ph $15.00. PB 101767

1. Ballistics, Exterior - Research 2. Aeromechanics - Research 3. Wind tunnels, Supersonic - Research 4. Aerodynamics, Supersonic - Research 5. Flow, Compressible 6. American Physical Society. Fluid Dynamic Division 7. NOLR 1133.

See also PB 101764 - PB 101766; PB 101768 - PB 101770.

VISCID FLOW OF AIR IN A NARROW SLOT, by G.L. Shires. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1948. 31p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 101812

The properties of the viscid flow of air in a rectangular slot having a width large in comparison with its depth are investigated. The results of various tests are found to verify theoretical and empirical relationships between the pressure distribution in the slot, the air mass flow and temperature, and the slot dimensions. Both laminar and turbulent flows are considered. Cover date is 1950. S.O. Code no. 23-9006-13. Memorandum no. M. 46. ARC CP 13.

PSYCHOLOGY

COMPARATIVE COMPOSITE VALIDITIES OF BATTERIES OF SHORT VERSUS LONG TESTS, by Leland D. Brokaw. U. S. Air Force. Human Resources Research Center, Lackland Air Force Base, San Antonio, Texas. Jan 1950. 26p tables Mi $2.00, Ph $3.75. PB 101877

1. Mechanics, Aeronautical - Training tests - Validity.

Project no. 21-03-012. Research bulletin 50-1.

COMPARISON OF NAVIGATOR ACTIVITIES IN THE HIGH AND MID-LATITUDES, by Julien M. Christensen. U. S. Air Materiel Command, Wright Field, Dayton, O. Aug 1950. 34p photos, diagrs, drawing, map, graphs, tables Mi $2.25, Ph $5.00. PB 101788

1. Navigators - Activities in high latitudes 2. Navigators - Activities in mid-latitudes 3. Latitude variation 4. AAF TR 6027.

Work was accomplished under Expenditure order 694-40, Aero Medical Laboratory, Engineering Division.

DUAL COMPENSATORY PURSUIT APPARATUS FOR USE IN PSYCHOLOGICAL RESEARCH, by Walter F. Grether. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Sep 1950. 10p photo, diagr, table Mi $1.25, Ph $1.25. PB 101972

A description is presented of a Dual Compensatory Pursuit Apparatus which has potential usefulness for measurement of psychomotor ability, for measurement of environmental influences upon human performance, and for general research on human visuomotor skills in relation to equipment design. The apparatus is very flexible with respect to the types of control movements by which it is operated, the location and nature of the visual display which is controlled, and the difficulty of the task. Experience with the apparatus has shown that it has high reliability as a test and that the mechanism has satisfactory stability and durability. Aero Medical Laboratory E.O. no. 694-17. AAF TR 6036.

EFFECTS OF ALTERNATING PRACTICE ON THE PERFORMANCE OF TWO ANTAGONISTIC MOTOR TASKS, (HUMAN ENGINEERING SYNTHESIS OF BASIC INFORMATION). REPORT PREPARED BY Walter Spieth and Don Lewis. Iowa State University, Iowa City, Iowa. Jul 1950. 9p graphs Mi $1.25, Ph $1.25. PB 101761

1. Performance tests 2. Ability tests 3. SDC TR 938-1-6.

SDC Human engineering project 20-M-1e. Contract N9onr-93801. Project designation NR-783-007.

FIELD TRYOUT OF A PROCEDURE FOR EVALUATING THE PROFICIENCY OF AIR ROUTE TRAFFIC CONTROLLERS, by John A. Nagay. U. S. Civil Aeronautics Administration. Oct 1950. 118p diagrs, tables Mi $4.75, Ph $15.00. PB 102250

The objectives of the study were to determine the observer-observer and test-retest reliability of a procedure for evaluating the proficiency of air route traffic controllers and to determine the extent to which it was practical for field use and acceptable to field personnel. Project conducted by American Institute for Research, Inc. under auspices of National Research

Council, Committee on Aviation Psychology with funds provided by CAA supplemented by a grand under T.O. IX. Contract no. N7-onr-291. CAA 91.

FURTHER ATTEMPTS TO DEMONSTRATE INTERFERENCE IN THE PERFORMANCE OF ROTARY PURSUIT TASKS, by James L. Hedlund and Don Lewis. Iowa State University, Iowa City, Iowa. Jun 1950. 11p photos, diagrs, graphs Mi $1.75, Ph $2.50. PB 101716

The chief importance of the findings on rotary pursuit tasks is that they contribute to a more complete knowledge of motor skills, especially of the types of skills which are tied up, in their acquisition, retention, loss, and reacquisition, with both negative and positive transfer effects. Human engineering synthesis of basic information. SDC Human engineering project 20-M-1e. Contract N9onr-93801. Project designation NR-783-007. SDC TR 938-1-3.

RESPONSE PRACTICE AS A FACTOR IN TRANSFER OF TRAINING, by Dr. Gordon A. Eckstrand. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, O. Jul 1950. 20p graphs, tables Mi $1.75, Ph $2.50. PB 101634

1. Psychology, Aviation - Tests 2. Training devices 3. AAF TR 6017.

Experimental data collected at Miami University, Oxford, Ohio under contract no. W-33-038-ac-15927.

STUDIES IN COMPLEX COORDINATION. I. PERFORMANCE ON THE TWO-HAND COORDINATOR AS A FUNCTION OF THE PLANES OF OPERATION OF THE CONTROLS, (HUMAN ENGINEERING SYSTEM STUDIES). REPORT PREPARED by Eugenia B. Norris and S.D.S. Spragg. Rochester. University. Dept. of Psychology. Aug 1950. 19p photos, graphs, tables Mi $1.75, Ph $2.50. PB 101763

1. Performance tests 2. Ability tests 3. Airplanes - Controls - Operation 4. Hands - Coordination 5. SDC TR 241-6-3.

Contract N6onr-241, T.O. 6. Project designation NR-783-006. SDC Human engineering project 20-M-1d.

STUDY OF WARMUP DECREMENT IN PURSUIT ROTOR PERFORMANCE, (HUMAN ENGINEERING SYNTHESIS OF BASIC INFORMATION), REPORT PREPARED by Jack A. Adams. Iowa State University, Iowa City, Iowa. Jul 1950. 19p graphs, tables Mi $1.75, Ph $2.50. PB 101762

1. Performance tests 2. Ability tests 3. Rotor aircraft - Aerodynamics 4. SDC TR 938-1-5.

SDC Human engineering project 20-M-1e. Contract N9onr-93801. Project designation NR-783-007.

RUBBER AND RUBBER PRODUCTS

AUXILIARY MATERIALS, NEW SOFTENERS; RENACIT II AND III, by Stoecklin and Greiff. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1942. 10f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102091

1. Rubber, Buna - Auxiliary products - Germany 2. Renacit II (Trade name) 3. Renacit III (Trade name) 4. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 5. Micro BIOS FD 1437/48, Frames 1-7

Abstract available as PB 102091s. 2p. Mi $1.25, Ph $1.25. Papers read at 8th Kauteko meeting Apr 1942.

BEHAVIOR UNDER OPEN AIR EXPOSURE OF IGELIT PCU FOILS, PLASTICIZED WITH PLASTOMOLL KF OR MOLLIT BG, AND INFLUENCE OF STABILIZERS ON THE EXPOSURE BEHAVIOR, by Dr. Loeffler. I. G. Farbenindustrie A. G., Schkopau, Ger. Jan 1945. 8f graphs (Text in German) Mi $1.25, Enl Pr $2.50. PB 102135

1. Igelit PCU (Trade name) 2. Polyvinyl chloride, Unchlorinated - Stability - Germany 3. Plasticizers - Tests - Germany 4. Plastomoll KF (Trade name) 5. Mollit BG (Trade name) 6. Micro BIOS FD 2320/47, Frames 1-7.

Abstract available as PB 102135s. 1p. Mi $1.25, Ph $1.25.

MATERIAL SPECIFICATION: BRAIDED RUBBER TUBING FOR BOMB SIGHT INSTALLATIONS. Gt. Brit. Ministry of Supply. Feb 1950. 4p drawing, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 101880

1. Tubing, Rubber - Braided - Gt. Brit. 2. Bombsights - Installation - Gt. Brit. 3. MS DTD MS 373A. Superseding D.T.D. 373. 70-9999.

REPRINTS FROM TECHNICAL JOURNALS RELATING TO THE PRODUCTION OF SYNTHETIC RUBBER AND PLASTICS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 92f photos, graphs, tables (Text in German) Mi $4.25, Enl Pr $13.75. PB 101744

1. Rubber, Synthetic - Production - Germany 2. Plastics - Manufacture - Germany 3. Micro BIOS FD 2403/47, Frames 1-90.

Abstract available as PB 101744s. 2p. Mi $1.25, Ph $1.25. Reprints are from Technische Rundschau 1941, no. 34-35; from ATZ Automobiltechnische Zeitschrift, v. 46, no. 5, 1943 by Dr. R. Steinborn; from Kautschuk 1942, no. 12 and 1943, no. 1, by P. Stoecklin; from Kunststoffe, v. 33, 1943; from Kunststoffe v. 34, 1944, by H. Hofmeier and W. Schroeder; from Kunstoffe v. 34, no. 6/7, 1944, by P. Nowak; and other short abstracts.

STANDARD CONDITIONS FOR IGELIT PCU POWDERS TYPE K FOR HEAVY FIELD CABLES; TESTING AND CABLE-MAKING EQUIPMENT. I. G. Farbenindustrie, A. G., Schkopau, Ger. 1941-1944. 110f photos, drawings (Text in German) Mi $4.50, Enl Pr $15.00. PB 102136

1. Igelit PCU (Trade name) 2. Igelit PCU K (Trade name) 3. Cables - Manufacture - Germany 4. Cables - Testing equipment - Germany 5. Micro BIOS FD 2338/47, Frames 1-104.

Abstract available as PB 102136s. 2p. Mi $1.25, Ph $1.25. Includes reprint from VDI Zeitschrift, v. 86, no. 41/42, Oct 17, 1942 of article by H. Beck and A. Rehbock on spray-casting of plastic mantles for electrical cables.

ZUR FRAGE DER CYCLISIERUNG VON BUNA AUF HEISSEN WALZEN (INFLUENCE OF CYCLISATION ON THE DEFO VALUE OF THE CRUDE BUNA BLANKET). I. G. Farbenindustrie A. G., Schkopau, Ger. Dec 1943. 9f graphs (Text in German) Mi $1.25, Enl Pr $2.50. PB 101739

1. Rubber, Buna - Cyclization - Germany 2. Rubber, Buna - Elasticity - Germany 3. Rubber, Buna - Thermal softening - Germany 4. Micro BIOS FD 2360/47, Frames 1-8.

Abstract available as PB 101739s. 1p. Mi $1.25, Ph $1.25.

STRUCTURAL ENGINEERING

ANALYSIS OF SHEAR STRENGTH OF HONEYCOMB CORES FOR SANDWICH CONSTRUCTIONS, by Fred Werren and Charles B. Norris. U. S. National Advisory Committee for Aeronautics. Oct 1950. 16p photo, diagr, drawing, graph, tables Mi $1.75, Ph $2.50. PB 101883

An analysis was undertaken to arrive at a mathematical formula by which the shear strengths of honeycomb cores for sandwich constructions could be calculated. The analysis is partly empirical, being based upon data obtained from previous tests of plywood panels. It was applied successfully to honeycomb cores composed of resin-impregnated papers, but should be verified for materials greatly different before it is generally applied. NACA TN 2208.

ANALYTICAL DETERMINATION OF COUPLED BENDING-TORSION VIBRATIONS OF CANTILEVER BEAMS BY MEANS OF STATION FUNCTIONS, by Alexander Mendelson and Selwyn Gendler. U. S. National Advisory Committee for Aeronautics. Sep 1950. 62p graphs, tables Mi $3.00, Ph $8.75. PB 101771

A method based on the concept of Station Functions is developed for calculating the modes and the frequencies of nonuniform cantilever beams vibrating in torsion, bending, or coupled bending-torsion motion. Deflections are obtained in terms of physical properties of the beam and Station Numbers, which are general in nature and which are tabulated for a number of stations ranging from one to eight. Examples are worked out in detail; comparisons are made with exact theoretical and with experimental results. NACA TN 2185.

FASTENING METAL FITTINGS TO WOODEN BEAMS, by D. A. Shinn. U. S. Army. Air Corps. Materiel Division, Wright Field, Dayton, Ohio. Apr 1942. 20p photos, tables Mi $1.75, Ph $2.50. PB 101793s

Tests were conducted to compare the static tensile strength of steel fittings fastened with steel bolts and bushings, Cycleweld adhesive, or a combination of both, to wood structural members. The design, strength, and type of failure are presented for sixteen separate beams. Preliminary tests indicated that a joint fabricated with a steel fitting bonded with Cycleweld adhesive to laminated hardwood, which in turn is bonded with a resin adhesive to a spruce beam, will develop static strength and be lighter in weight than the best bolted design. AAF TSEAM MR Exp-M-51 Str 290, add. 1.

PROCEEDINGS OF THE FIRST STRUCTURAL ENGINEERING CONFERENCE, MARCH 3 AND 4, 1950; SPONSORED BY THE CIVIL ENGINEERING DEPT. Florida. University. College of Engineering. Sep 1950. 56p photos, diagrs, maps, graphs Available from Florida Engineering and Industrial Experiment Station, College of Engineering, University of Florida, Gainesville, Fla. PB 101815

1. Structural engineering.

Bulletin no. 37. Engineering programs at the University of Florida, Vol. 4, no. 9.

REDUCTION OF SOUND TRANSMISSION THROUGH CONCRETE FLOORS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Jun 1950. 6p photo, diagrs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 101710

A description of some of the practical ways of obtaining improved sound insulation of concrete floors by the following three methods: A. By the use of a resilient surface B. By using a floating floor C. By providing a suspended ceiling. S.O. Code no. 72-22-0-19. DSIR BRD 19.

RELATIVE ADHESION OF MORTARS TO NEW AND USED BRICK FOR STAR BRICK YARD, EPPING, N.H. New Hampshire. University. Engineering Experiment Station, Durham, N. H. Reprinted Mar 1943. 14p tables Available from the Director, Engineering Experiment Station, University of New Hampshire, Durham, N. H. PB 101832

1. Mortar (Building material) - Adhesive qualities 2. Bricks - Adhesion of mortars.

Project no. 98.

RESEARCH ON LOADING TESTS OF REINFORCED CONCRETE FLOOR STRUCTURES; REPORT OF WORK CARRIED OUT AT THE STANDARDS INSTITUTION OF ISRAEL by M. A. Arnan, M. Reiner and M. Teinowitz. Research Council of Israel. Jul 1950. 53p photos, diagrs, graphs, tables Mi $2.75, Ph $7.50 PB 101850

1. Floors, Concrete - Tests 2. Concrete, Reinforced - Tests.

SHOCK TRANSMISSION IN BEAMS, by A. Robinson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1945. 68p diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.75. PB 101664

The present report is confined to the consideration of shock loads in beams of constant or variable characteristics. In particular, it is shown that flexural disturbances consist of shear and bending waves spreading in the beam in both directions while continuously interfering with each other. Cover date is 1950. S. O. Code no. 23-2265. ARC RM 2265.

SMOKY CHIMNEYS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. May 1950. 4p drawings Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102018

1. Flues - Gt. Brit. 2. DSIR BRD 18.

S.O. Code no. 72-22-0-18.

SOME COMMON DEFECTS IN BRICKWORK, by D.G.R. Bonnell and W. R. Pippard. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station Watford, England. Jan 1950. 29p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.35. PB 102013

1. Bricklaying - Defects - Gt. Brit. 2. Buildings, Brick - Cracking - Gt. Brit. 3. DSIR NB B 9.

TEXTILES AND TEXTILE PRODUCTS

ACETATE RAYON DYESTUFFS. PAPERS G1-G12 READ AT THE 11TH AKO MEETING, WOLFEN. I. G. Farbenindustrie A. G., Wolfen, Ger. 1937. 83f (Text

in German) Mi $3.75, Enl Pr $12.50. PB 101893

1. Rayon - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 3180/48, Frames unnumbered.

Abstract available as PB 101893s. 3p. Mi $1.25, Ph $1.25. See also PB 101891-101892, 101894-101895.

ACID WOOL DYESTUFFS. PAPERS A1-A12 READ AT THE 12TH AKO MEETING, DEC 14, 1937. I. G. Farbenindustrie A. G., Leverkusen, Ger. Dec 1937. 60f (Text in German) Mi $2.75, Enl Pr $8.75. PB 101896

1. Wool - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 245/50, Frames unnumbered.

Abstract available as PB 101896s. 3p. Mi $1.25, Ph $1.25. See also PB 101897-101900.

CHROME WOOL DYESTUFFS. PAPERS B1-B8 READ AT THE 12TH AKO MEETING, DEC 14, 1937. I. G. Farbenindustrie A. G., Leverkusen, Ger. Dec 1937. 33f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101897

1. Wool - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 247/50, Frames unnumbered.

Abstract available as PB 101897s. 2p. Mi $1.25, Ph $1.25. See also PB 101896, 101898-101900.

DEVELOPMENT DYESTUFFS FOR COTTON. PAPERS E1-E7, READ AT THE 11TH AKO MEETING, WOLFEN. I. G. Farbenindustrie A. G., Wolfen, Ger. 1937. 29f (Text in German) Mi $2.00, Enl Pr $5.00. PB 101891

1. Cotton - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 3178/48, Frames unnumbered.

Abstract available as PB 101891s. 2p. Mi $1.25, Ph $1.25. See also PB 101892-101895.

DEVELOPMENT DYESTUFFS FOR COTTON AND MIXED TEXTILES. PAPERS D1-D6 READ AT THE 12TH AKO MEETING, DEC 14, 1937 AT MAINKUR. I. G. Farbenindustrie A. G., Leverkusen, Ger. Dec 1937. 63f (Text in German) Mi $3.00, Enl Pr $10.00. PB 101899

1. Cotton - Dyes and dyeing - Germany 2. Woolstra (Trade name) 3. Wool - Dyes and dyeing - Germany 4. AKO (Kommission für Azofarben) 5. Micro BIOS FD 251/50, Frames unnumbered.

Abstract available as PB 101899s. 3p. Mi $1.25, Ph $1.25. See also PB 101896-101898, 101900.

DIRECT COTTON DYESTUFFS, PAPERS C1-C16 READ AT THE 12TH AKO MEETING, DEC 14, 1937 AT MAINKUR. I. G. Farbenindustrie A. G., Leverkusen, Ger. Dec 1937. 51f (Text in German) Mi $2.75, Enl Pr $8.75. PB 101898

1. Cotton - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 250/50, Frames unnumbered.

Abstract available as PB 101898s. 3p. Mi $1.25, Ph $1.25. See also PB 101896-101897, 101899-101900.

PRAKTISK HANDLEDNING FÖR FIBERIDENTIFIERING (MANUAL FOR THE IDENTIFICATION OF FIBERS), by Bertil Ivarsson. 1950. 12p photos (Text in Swedish) Mi $1.75, Ph $2.50. PB 101498

A manual for the identification of fibers commonly used in Swedish paper manufacture is given. The data compiled is based on a critical study of literature in this field. Different methods of analysis and their reliability have been checked as well as their usefulness for practical work. Special importance has been given to the morphological analysis. Thus a large number of new microphotographs have been taken as a complement to those found in literature. After a description of the reagent solutions and their preparation, the treatment of the samples before microscoping is discussed. The analysis comprises the determination of fiber groups followed by identification of the individual fibers by means of their morphological characteristics. Methods for determination of sulphate and sulphite pulp in unbleached and bleached pulps respectively and methods for the determination of the degree of cooking of the pulp completes the article. Summaries in English and German. Reprint from Svensk papperstidning 52 (1949) p. 493-504. Svenska Träforskningsinstitutet. Träkemi och Papperssteknik. Meddelande 49.

REPORTS ON ACETATE RAYON DYESTUFFS. PAPERS H1-H12 READ AT THE 13TH SCIENTIFIC AKO MEETING HELD AT LUDWIGSHAFEN 3 NOV 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Nov 1938. 70f (Text in German) Mi $3.00, Enl Pr $10.00. PB 101903

1. Rayon - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 297/50, Frames unnumbered.

Abstract available as PB 101903s. 3p. Mi $1.25, Ph $1.25. See also PB 101887-101889, 101901-101902.

REPORTS ON ACID WOOL DYESTUFFS. PAPERS A1-A15 READ AT THE 13TH SCIENTIFIC AKO MEETING IN LUDWIGSHAFEN 3.11.38. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938. 78f graphs (Text in German) Mi $3.50, Enl Pr $11.25. PB 101923

1. Wool - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 273/50, Frames unnumbered.

Abstract available as PB 101923s. 3p. Mi $1.25, Ph $1.25. For other papers read at this meeting see PB 101922, 101924-101926, 101901-101903, 101887-101889.

REPORTS ON CHROME WOOL DYESTUFFS. PAPERS B1-B8 READ AT THE 13TH SCIENTIFIC AKO MEETING IN LUDWIGSHAFEN 3.11.38. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938. 27f (Text in German) Mi $2.00, Enl Pr $5.00. PB 101924

1. Wool - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 274/50, Frames unnumbered.

Abstract available as PB 101924s. 2p. Mi $1.25, Ph $1.25. For other papers read at this meeting see PB 101887-101889, 101901-101903, 101922-101923, 101925-101926.

REPORTS ON COTTON DEVELOPMENT DYESTUFFS. PAPERS D1-D5 READ AT THE 13TH SCIENTIFIC AKO MEETING IN LUDWIGSHAFEN 3.11.38. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938. 20f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101926

1. Cotton - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 288/50, Frames unnumbered.

Abstract available as PB 101926s. 2p. Mi $1.25, Ph $1.25. For other papers read at this meeting see PB 101887-101889, 101901-101903, 101922-101925.

REPORTS ON DIRECT COTTON DYESTUFFS. PAPERS C1-C7 READ AT THE 13TH SCIENTIFIC AKO MEETING IN LUDWIGSHAFEN 3.11.38. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938. 31f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101925

1. Cotton - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 275/50, Frames unnumbered.

Abstract available as PB 101925s. 2p. Mi $1.25, Ph $1.25. For other papers read at this meeting see PB 101887-101889, 101901-101903, 101922-101924, 101926.

SOME FELTING PROPERTIES OF WOOLS OF DIFFERENT GEOGRAPHICAL ORIGINS, by Arnold M. Sookne, Herman Bogaty and Milton Harris. Harris Research Laboratories, Washington, D. C. Sep 1950. 13p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 101687

1. Wool - Shrinking 2. Wool - Felting properties 3. QMC TSR 63.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

AERONAUTICS, LIGHTER-THAN-AIR CRAFT. BRIEF OUTLINE OF THE HISTORY AND DEVELOPMENT OF THE BALLOON AND THE AIRSHIP WITH REFERENCE TO THE NATIONAL AERONAUTICAL COLLECTION AND A CATALOGUE OF THE EXHIBITS, by M.J.B. Davy. Gt. Brit. Ministry of Education, Science Museum. 1950. 141p photos, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 101630

This publication is intended to serve as an introduction to the history and development of lighter-than-air craft, with reference to that section of the National Aeronautical Collection at the Science Museum which has been formed to illustrate this branch of aeronautics, and an endeavour has been made in the historical and technical survey to refer to all the salient features of design from the beginning up to the present day. S.O. Code no. 20-1029-0-50.

APPROXIMATE METHOD OF CALCULATING PRESSURES IN THE TIP REGION OF A RECTANGULAR WING OF CIRCULAR-ARC SECTION AT SUPERSONIC SPEEDS, by K. R. Czarnecki and James N. Mueller. U. S. National Advisory Committee for Aeronautics. Oct 1950. 24p diagrs, graphs Mi $2.00, Ph $3.75. PB 101953

Presents an approximate method of calculating pressures in the tip regions of a rectangular wing with circular-arc symmetrical sections by means of which it is possible to determine the pressures at supersonic speeds to a greater degree of accuracy than is possible with linearized methods. A brief comparison of some calculated pressure distributions with experimental results is included. NACA TN 2211.

ATTAINABLE CIRCULATION ABOUT AIRFOILS IN CASCADE, by Arthur W. Goldstein and Artur Mager. U. S. National Advisory Committee for Aeronautics. 1950. 27p graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D.C. $.25. PB 101969

From consideration of available information on boundary-layer behavior, a relation among profile thickness, maximum surface velocity, Reynolds number, velocity diagram, and solidity is established for a cascade of airfoils immersed in a two-dimensional incompressible fluid flow. NACA Report 953.

CIVIL AVIATION. REPORT OF THE MINISTRY OF CIVIL AVIATION FOR 1948 AND 1949. Gt. Brit. Ministry of Civil Aviation. 1950. 106p photos, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 102041

This second Post-War Report on Civil Aviation reviews the progress and development of British Civil Aviation during the years 1948 and 1949, a period which, through force of economic circumstance was largely devoted to consolidation of past achievements and planning for future expansion. MCA P 81.

COMPARISON OF THREE THICK, SYMMETRICAL MULTI-SLOT SUCTION AEROFOILS, by N. Gregory and A. R. Curtis. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1948. 9p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.30. PB 102042

Two symmetrical thick suction aerofoils with additional small velocity discontinuities over the forward part of the aerofoil are compared with the 30% Griffith aerofoil. For a given transition position, the suction quantities and ideal effective drag coefficients are higher than for the 30% Griffith aerofoil, but more favourable velocity gradients and an increased C_L range are obtained. The drag and suction quantities are equal to those obtained when the additional suction slots are inserted (in the Griffith aerofoil) without the associated small velocity discontinuities. In all cases, reductions in drag are achieved with extra slots if extents of otherwise turbulent flow are replaced by laminar flow. Cover date is 1950. S. O. Code no. 23-9006-20. ARC CP 20.

EQUATIONS AND CHARTS FOR THE RAPID ESTIMATION OF HINGE-MOMENT AND EFFECTIVENESS PARAMETERS FOR TRAILING-EDGE CONTROLS HAVING LEADING AND TRAILING EDGES SWEPT AHEAD OF THE MACH LINES, by Kennith L. Goin. U. S. National Advisory Committee for Aeronautics. Nov 1950. 92p graphs, tables Mi $4.25, Ph $12.50. PB 102037

Existing conical-flow solutions have been used to calculate the characteristics of deflected trailing-edge controls located either at the wing tip or far enough inboard to prevent the outermost Mach lines from the controls from crossing the wing tip. For either location, the controls have been assumed to be located far enough outboard to prevent the innermost Mach lines from crossing the wing-root chord. The method for determining control hinge moment resulting from wing angle-of-attack loading is restricted to wings having leading edges swept ahead of the Mach lines. Also included is an approximate method by which the theoretical characteristics may be corrected for airfoil-section thickness. NACA TN 2221.

MATERIALY PO GIDRODINAMICHESKOMU RASCHETU GLISSEROV I GIDROSAMOLETOV. (HYDRO-

DYNAMIC PROPERTIES OF PLANING SURFACES AND FLYING BOATS), by N. A. Sokolov. Oct 1950. 58p diagrs, graphs, tables Mi $2.75, Ph $7.50. PB 101952

The general lift and drag equations for the motion of a solid body on a free surface are developed and modified for the case of the flat planing surface. The resulting analytical expressions and an evaluation of the experimental data of Sottorf are combined to enable the lift and drag of a seaplane float or hull with a flat bottom to be calculated. The agreement between the theory and direct experimental results is shown to be satisfactory. Translation from CAHI report no. 149. 1932, p. 1-39. NACA TM 1246.

NOTE ON THE EFFECT OF COMPRESSIBILITY ON THE PROFILE DRAG OF AEROFOILS AT SUBSONIC MACH NUMBERS IN THE ABSENCE OF SHOCK WAVES, by A. D. Young and N. W. Winterbottom. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1940. 16p graphs, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 101663

1. Airfoils - Compressibility effects - Gt. Brit. 2. Mach number - Effect - Gt. Brit. 3. ARC RM 2400.

Cover date is 1950. S. O. Code no. 23-2400.

Engines and Propellers

EFFECT OF HEAT AND POWER EXTRACTION ON TURBOJET-ENGINE PERFORMANCE. III. ANALYTICAL DETERMINATION OF EFFECTS OF SHAFT-POWER EXTRACTION, by Stanley L. Koutz, Reece V. Hensley, and Frank E. Rom. U. S. National Advisory Committee for Aeronautics. Oct 1950. 49p graphs Mi $2.50, Ph $6.25. PB 101954

Generalized working charts, prepared by matching experimentally determined component characteristics of a typical axial-flow-type turbojet engine, are presented for determining the effect of shaft-power extraction on engine performance. The effects of shaft-power extraction on engine performance under several representative modes of engine operation are presented by use of the generalized working charts. Variation in the effect of shaft-power extraction with altitude, flight Mach number, and engine-inlet temperature is considered. NACA TN 2202.

EFFECT OF PROPELLER THRUST ON DOWNWASH AND VELOCITY AT TAILPLANE. DATA FROM LOW SPEED TUNNEL TESTS, by A. Spence. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1947. 19p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 101947

The results of low-speed wind tunnel model tests on longitudinal stability of five models have been analysed to give the effects of propeller thrust on the angle of downwash and the velocity at the tailplane. No attempt at detailed generalisation of the results has been made at this stage. The results do, however, give an indication of the magnitude of the effects and show some of the more important variables. Cover date is 1950. Report no. Aero. 2218 from Royal Aircraft Establishment. S. O. Code no. 23-9006-21. ARC CP 21.

Aerodynamics

AERODYNAMIC COEFFICIENTS FOR AN OSCILLATING AIRFOIL WITH HINGED FLAP, WITH TABLES FOR A MACH NUMBER OF 0.7, by M. J. Turner and S. Rabinowitz. U. S. National Advisory Committee for Aeronautics. Oct 1950. 46p graphs, tables Mi $2.50, Ph $6.25. PB 101951

Dietze's method for the solution of Possio's integral equation is used to determine the chordwise distribution of lift on an oscillating airfoil with simple hinged flap in two-dimensional compressible flow (subsonic). Results of these calculations are used to prepare tables of aerodynamic coefficients for lift, pitching moment (referred to quarter-chord point), and flap hinge moment for a Mach number of 0.7; the motions considered are vertical translation, airfoil rotation about the quarter-chord point, and rotation of the flap about its hinge line. NACA TN 2213.

ANALYTICAL INVESTIGATION OF LATERAL MOTIONS OF AN AIRPLANE AT THE STALL WITH AND WITHOUT AUTOPILOT, by G. F. Campbell and G. Bull. Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y. Apr 1949. 56p graphs, tables Mi $2.75, Ph $7.50. PB 102003

The report presents the results of a study made to develop a method of predicting quantitatively the lateral motions of a stalled airplane in the design stages. Also the possibility of controlling lateral motions of a stalled airplane an automatic pilot was investigated. It was found that an automatic pilot in which the rudder deflection was made proportional to displacement, rate, and acceleration in roll provided a stable system for the airplane and automatic pilot combination used in the calculations. If rudder were proportional to heading change and its derivatives the system would not be stable. Report TB 556 F-1.

BOUNDARY-LAYER MEASUREMENTS IN 3.84- BY 10-INCH SUPERSONIC CHANNEL, by Paul F. Brinich. U. S. National Advisory Committee for Aeronautics. Oct 1950. 50p photo, drawing, graphs Mi $2.50, Ph $6.25. PB 101949

Boundary-layer measurements were made in a two-dimensional channel designed by potential-flow methods for a uniform test-section Mach number of 2.08. Turbulent boundary layers were found throughout the channel for almost all Reynolds numbers at which investigations were made. A comparison of experimental boundary-layer development with theory, in which a modification of incompressible empirical friction coefficients was used, showed close agreement. NACA TN 2203.

IMPACT-PRESSURE INTERPRETATION IN A RAREFIED GAS AT SUPERSONIC SPEEDS, by E. D. Kane and G. J. Maslach. U. S. National Advisory Committee for Aeronautics. Oct 1950. 32p photos, graphs, tables Mi $2.25, Ph $5.00. PB 101950

The interpretation of measured impact pressures in a rarefied gas is reviewed and available analyses are summarized. Experimental results are presented for source-shaped impact tubes for Mach numbers from 2.3 to 3.6 and for Reynolds numbers from 25 to 804 (based on impact-probe diameter and free-stream conditions). The data show that the Rayleigh formula requires correction for conditions where the ratio of Mach number to Reynolds number is greater than 0.015. The maximum correction to the formula, obtained at the low pressure limit of the experimental

equipment, was 13 percent (when the ratio of Mach number to Reynolds number was 0.093). NACA TN 2210.

Land Transportation

ELECTRIFICATION OF THE SWEDISH STATE RAILWAYS AND ITS SIGNIFICANCE IN TRANSPORT ECONOMICS, by Th. Thelander. 1950. 48p photos, drawings, graphs, tables Mi $2.50, Ph $6.25. PB 101715

1. Railroads, Electric - Sweden 2. Transportation - Economics - Sweden 3. Sweden. State Railways Board.

Marine Transportation

HYDRODYNAMIC DESIGN OF SEAPLANE FLOATS, by K. M. Tomaszewski. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1946. 64p photos, fold drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 101948

It is shown that a good compromise can be achieved between design for water stability, trim, spray, seaworthiness on waves, good aerodynamic form, buoyancy and ease of manufacture. Much stronger afterbodies can be used for floats than for hulls without loss of porpoising stability and are necessary for good stability and trim at the hump speed. The final form evolved should prove a useful basis for the design of floats for any particular purpose. Cover date is 1950. Report Aero 2154 from Royal Aircraft Establishment. S. O. Code no. 23-9006-15. ARC CP 15.

MAXIMUM IMPACT PRESSURES ON SEAPLANE HULL BOTTOMS, by A. G. Smith, I. W. McCaig and W. M. Inverarity. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1950. 114p diagrs, drawings (2 fold) graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.70. PB 101811

An investigation has been made to determine the effect of the various impact parameters on the maximum impact pressures on a hull bottom impinging on a water surface. Experimental results show that the maximum pressure measured on a diaphragm depends on the diaphragm size and position and that it is not the true maximum pressure at that point. Further work both theoretical and experimental, is required to extend these results to include pressures at small flight patch angles and in the planing condition. S. O. Code no. 23-9006-4. ARC CP 4.

MISCELLANEOUS

BEACH CYCLES IN SOUTHERN CALIFORNIA, by Francis P. Shepard. U. S. Beach Erosion Board. Jul 1950. 29p photos, diagrs, maps, graphs Mi $2.00 Ph $3.75. Also available free from Beach Erosion Board, U. S. Corps of Engineers, 5201 Little Falls Road, N. W., Washington 16, D. C. PB 101865

1. Sands, Beach 2. Oceanography 3. California. University. Scripps Institution of Oceanography 4. ENG BEB TM 20.

Submarine geology report no. 11 of the Scripps Institution of Oceanography. Contribution, new series no. 474.

JAPANESE LAND REFORM PROGRAM, by Laurence I. Hewes, Jr. Supreme Commander for the Allied Powers. Nautral Resources Section. Mar 1950. 120p diagrs, map, tables Mi $4.75, Ph $15.00. PB 101965

1. Land tenure - Law - Japan 2. SCAP NRS 127.

JAPANESE WHALING INDUSTRY PRIOR TO 1946, by William M. Terry. Supreme Commander for the Allied Powers. Natural Resources Section. Mar 1950. 53p photos, fold diagr, maps, graphs, tables Mi $2.75, Ph $7.50. PB 101964

1. Whaling - Japan 2. SCAP NRS 126.

ONE HUNDRED YEARS OF SUBMARINE CABLES, by G.R.M. Garratt. Gt. Brit. Ministry of Education. Science Museum. 1950. 84p photos, drawings, col. map, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.65. PB 101697

This small handbook has been written, partly to coincide with the Cuntenary Exhibition and partly to form a convenient and permanent record of the development of a service in which British invention and enterprise have made the greatest contribution of any nation. Photographs accompany the report. Color in map will not reproduce. S. O. Code no. 29-1065.

RECONNAISSANCE SOIL SURVEY OF JAPAN: SHIKOKU, by M. Ellsworth Springer. Supreme Commander for the Allied Powers. Natural Resources Section. Sep 1950. 78p photos, diagrs, maps (7 fold col), graph, tables Mi $3.50, Ph $10.00. PB 101685

1. Soils - Surveys - Japan 2. SCAP NRS 110-D.

Color in maps will not reproduce well.

REPORT FOR THE YEAR 1948-49. Gt. Brit. Dept. of Scientific and Industrial Research. 1950. 253p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 102192

1. Scientific research - Gt. Brit. 2. Industrial research - Gt. Brit.

Cmd 8045. (GL)

SELECTED GOVERNMENT RESEARCH REPORTS. GT. BRIT. MINISTRY OF SUPPLY. VOL. 7: ADHESIVES. 1950. 101p photos, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.70. PB 101846

1. Research - Gt. Brit. 2. Adhesives - Research - Gt. Brit. 3. Glue, Resin - Synthetic - Gt. Brit. 4. Glue, Casein - Gt. Brit. 5. Adhesives - Metal to metal - Gt. Brit. 6. Adhesives - Wood to wood - Gt. Brit. 7. Adhesives - Plywood - Gt. Brit. 8. Adhesives - Veneers - Gt. Brit. 9. Aluminum alloys - Adhesives - Gt. Brit. 10. Wood, Laminated - Adhesives - Gt. Brit. 11. Dermatology - Research 12. Formaldehyde - Effect on skin 13. Gt. Brit. Ministry of Aircraft Production 14. Gt. Brit. Dept. of Scientific and Industrial Research 15. Gt. Brit. Royal Aircraft Establishment, Farnborough, England.

S.O. Code no. 51-294-7. Contents: Report no. 1. Synthetic resin glues, by W. J. Roff and K.W. Pepper.

(Based on Ministry of Aircraft Production. Scientific and Technical Memorandum no. 16/46, Mar 1946), p. 1-18. - Report no. 2. Adhesion of glues to plywood (Part I), by M.G.M. Pryor: (Based on R. A. E. Report MAT/N/1/2001, Sep 1941). p. 19-32. - Report no. 3. Adhesion of glues to plywood (Part II), by M.G.M. Pryor and C. M. Gordon. (Based on R.A.E. Report MAT/N/2/2001, Jan 1944), p. 33-64. - Report no. 4. Tests to determine the effects of various types of adhesives on the final shape of laminated bends, by W. C. Stevens and N. Turner, (Based on Ministry of Aircraft Production Scientific and Technical Memorandum no. 26/45, Nov 1945), p. 65-74. - Report no. 5. Part played by formaldehyde in dermatitis attributable to synthetic resin glues, by G. E. Little. (Based on Ministry of Aircraft Production. Scientific and Technical Memorandum no. 21/45, Nov 1945), p. 75-89.

STERILIZATION OF OXYGEN MASKS, by Robert L. Summers and Howard F. Holton. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Sep 1950. 7p Mi $1.25, Ph $1.25. PB 101971

Factual data is given together with conclusions on the carboxide gas techniques. While 100% sterilization is obtained using 50% concentration for exposure periods of not less than 20 hours, the rubber parts of the mask absorb sufficient ethylene oxide to produce erythema on personnel using the mask following the sterilization. Aero Medical Laboratory, Engineering Division. E. O. no. 698-40. AAF TSEAA MR 698-49.

PATENTS

Chemicals and Allied Products

DRAFTS OF PATENT APPLICATIONS RELATING TO CATALYSTS, AROMATICS, ALCOHOLS, AND ALLIED PRODUCTS, PT. I. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941-1945. 712f (Text in German) Mi $9.00, Enl Pr $93.75. PB 101920

1. Patents - Germany - O.Z. 14478 2. Patents - Germany - O.Z. 14487 3. Patents - Germany - O. Z. 14426 4. Patents - Germany - O.Z. 13716 5. Patents - Germany - O.Z. 13715 6. Patents - Germany - O.Z. 12413 7. Patents - Germany - O. Z. 13043 8. Patents - Germany - O.Z. 15079 9. Patents - Germany - O.Z. 13005 10. Patents - Germany - O.Z. 13281 11. Patents - Germany - O. Z. 14117 12. Patents - Germany - O.Z. 12948 13. Patents - Germany - O.Z. 13783 14. Patents - Germany - O.Z. 14450 15. Patents - Germany - O. Z. 13350 16. Patents - Germany I 72811 IVd/12o 17. Patents - Germany I 68936 IVd/12o 18. Patents - Germany O.Z. 13916 19. Patents - Germany O.Z. 13345 20. Patents - Germany O.Z. 13010 21. Patents - Germany O.Z. 13974 22. Patents - Germany O.Z. 12240 23. Patents - Germany O. Z. 14807 24. Patents - Germany O.Z. 14433 25. Patents - Germany O.Z. 14364 26. Patents - Germany O. Z. 14074 27. Micro BIOS FD 1043/47, Frames 1-700.

Abstract available as PB 101920s. 4p. Mi $1.25, Ph $1.25. For Pt. II see PB 101921.

DRAFTS OF PATENT APPLICATIONS RELATING TO PROCESSES AND OPERATING DEVICES CONNECTED MAINLY WITH THE PRODUCTION OF WATER-GAS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1936-1942. 114f diagrs (Text in German) Mi $4.75, Enl Pr $16.25. PB 101929

1. Water gas - Production - Patents - Germany 2. Patents - Germany - O.Z. 9876 Mar 22, 1937 3. Patents - Germany - O.Z. 9899 Apr 2, 1937 4. Patents - Germany - O.Z. 9630 Nov 2, 1936 5. Patents - Germany - O.Z. 9631 Nov 3, 1936 6. Patents - Germany - O.Z. 11118 Nov 3, 1938 7. Patents - Germany - O.Z. 13147 Dec 8, 1941 8. Patents - Germany - O.Z. 13230 Jan 29, 1942 9. Patents - Germany - O.Z. 13090 Nov 7, 1941 10. Patents - Germany- O.Z. 13022 Oct 1, 1941 11. Patents - Germany - O.Z. 13021 Oct 1, 1941 12. Patents - Germany - O.Z. 11858 Nov 13, 1939 13. Patents - Germany - O.Z. 13103 Nov 15, 1941 14. Patents - Germany - O.Z. 9635 Nov 3, 1936 15. Patents - Germany - O.Z. 13166 Dec 23, 1941 16. Patents - Germany - O.Z. 13279 Feb 26, 1942 17. Patents - Germany - O.Z. 13219 Jan 23, 1942 18. Patents - Germany - O.Z. 13316 Mar 16, 1942 19. Micro BIOS FD 1345/49, Frames 1-112.

Abstract available as PB 101929s. 3p. Mi $1.25, Ph $1.25.

DRAFTS OF PATENT APPLICATIONS RELATING TO THE MANUFACTURE OF THIOSEMICARBAZONE PRODUCTS. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1943-1944. 45f (Text in German) Mi $2.50, Enl Pr $7.50. PB 101693

1. Semicarbazone, Thio-Compounds - Preparation - Patents - Germany 2. Patents - Germany - Le 3877, Oct. 28, 1943 3. Patents - Germany - Le 3878, Oct 28, 1943 4. Patents - Germany - Le 3879, Oct 28, 1943 5. Patents - Germany - Le 3880, Oct 28, 1943 6. Patents - Germany - Le 3946, Jan 18, 1944 7. Patents - Germany - Le 3947, Jan 18, 1944 8. Patents - Germany - Le 3954, Jan 27, 1944 9. Micro BIOS FD 316/50, Frames 1-37.

Abstract available as PB 101693s. 2p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO PROCESSES FOR PRODUCING LUBRICATING OILS. Norddeutsche Mineralölwerke Stettin G.m.b.H., Stettin-Pölitz, Ger. n.d. 11f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101593

1. Lubricating oils - Production - Patents - Germany 2. Patents - Germany - R 109307 IVd/12c 3. Patents - Germany - R 109211 IVc/23c 4. Patents - Germany - R 115016 IVd/23c 5. Micro BIOS FD 2876/46, Items 29-31, Frames 1-9.

Abstract available as PB 101593s. 1p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO THE PRODUCTION OF CARBOXYLIC ACIDS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940. 20f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102058

1. Acids, Carboxylic - Preparation - Patents - Germany 2. Patents - Germany - O.Z. 12314 Aug 20, 1940 3. Patents - Germany - O.Z. 12321 Aug 21, 1940 4. Patents - Germany - O.Z. 12167 May 24, 1940 5. Patents - Germany - O.Z. 12107 Apr 18, 1940 6. Patents - Germany - I 63283 IVd/12o suppl. 7. Micro BIOS FD 2385/48, Frames 1-17.

Abstract available as PB 102058s. 2p. Mi $1.25, Ph $1.25.

PATENT CLAIMS ON MANUFACTURING PROCESSES FOR VINYL CHLORIDE AND BUTADIENE CHLORIDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1942. 65f graphs (Text in German) Mi $3.00, Enl Pr $10.00. PB 101531

1. Vinyl chloride - Production - Patents - Germany 2. Patents - Germany - O.Z. 11662 Jul 18, 1939 and Jul 30, 1942 3. Patents - Germany - I 67083 May 25, 1940 4. Patents - Germany - C 51389 Feb 29, 1936 5. Patents - Germany - O.Z. 13759 Nov 2, 1942 6. Micro BIOS FD 2648/47, Frames 1-65.

Abstract available as PB 101531s. 2p. Mi $1.25, Ph $1.25.

PLASTIC COMPOUND SHEET FOR THE LINING AND COATING OF VESSELS. Dynamit A. G., Troisdorf, Ger. 1943-1944. 15f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101343

1. Coatings, Plastic - Germany 2. GP 723201 3. Micro BIOS DOCS 2578/1326 4. Micro BIOS FD 2394/47, Frames 1-13.

English abstract included.

PRODUCTION OF DIOXANE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 31f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101543

1. Dioxane - Production - Germany 2. Dioxane - Production - Patents - Germany 3. Patents - Germany - O.Z. 14885 Jul 26, 1944 4. Patents - Germany - J 77902 IVd/12o Jul 26, 1944 5. Micro BIOS FD 2643/47, Frames 165-197.

Abstract available as PB 101543s. 1p. Mi $1.25, Ph $1.25.

Machinery

PATENT APPLICATION RELATING TO POWDERED-METAL BEARINGS. Vereinigte Deutsche Metallwerke A. G., Heddernheim, Ger. Jul 1942. 8f diagr (Text in German) Mi $1.25, Enl Pr $2.50. PB 101932

1. Bearings, Lead-bronze - Patents - Germany 2. BIOS OR 15 LD 3. Patents - Germany - V 38,961 VIa/48b Jul 11, 1942 4. Micro BIOS HEC 11900 5. Micro BIOS FD 1765/49, Frames 1-7.

Abstract available as PB 101932s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS Overall Report no. 15, p. 105.

PATENT APPLICATIONS RELATING TO CLAMPS AND JOINTS FOR LIGHT METAL TUBES, RODS AND PROFILES USED FOR CONSTRUCTIONAL PURPOSES. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 1942-1943. 37f drawings (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 100975

1. Clamps - Patents - Germany 2. Tubes - Fittings - Patents - Germany 3. Patents - Germany Wo 2929 4. Patents - Germany M5/3024 5. Patents - Germany Wo 3149 6. Patents - Wo 3049 7. Patents - Germany Wo 3050 8. Micro BIOS FD 1091/48, Frames 1-17+19.

Abstract available as PB 100975s. 1p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO CONTINUOUS CASTING PROCESS AND MOULDS. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 1942-1943. 31f drawings (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 110166

1. Casting, Continuous - Patents - Germany 2. Castings - Molds - Patents - Germany 3. Patents - Germany Wo 3011 4. Patents - Germany Wo 3176 5. Patents - Germany Wo 3194 6. Patents - Germany Wo 3219 7. Micro BIOS FD 1094/48, Frames 1-11+17.

Abstract available as PB 110166s. 1p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO MANUFACTURE OF CONICAL PROFILES. I. G. Farbenindustrie A. G., Wolfen, Ger. 1940-1944. 162p drawings (Text in German and English) Mi $6.25, Enl Pr $22.50. PB 110259

1. Profiles, Conical - Manufacture - Patents - Germany 2. Patents - Germany Wo 2484 1940-1941 - Germany 3. Patents - Germany Wo 2650.1 1942 4. Patents - Germany Wo 2651 1941 5. Patents - Germany Wo 2651 B 1943 6. Patents - Germany Wo 2850 7. Patents - Germany Wo 2865 8. Patents - Germany Wo 2903 1942-1944 9. Patents - Germany Wo 2949 1942 10. Micro BIOS FD 1061/48, Frames 1-80+77.

Abstract available as PB 110259s. 2p. Mi $1.25, Ph $1.25.

Metal and Metal Products

AUSZÜGE DEUTSCHER PATENT-ANMELDUNGEN: BLOCHERZEUGUNG. KLASSE 7, BLECH-ROHR- UND DRAHTERZEUGUNG; KLASSE 49, MECHANISCHE METALLBEARBEITUNG (ABSTRACTS OF GERMAN PATENT APPLICATIONS: SHEET METAL PRODUCTION. CLASS 7, SHEET METAL, PIPE, AND WIRE PRODUCTION; CLASS 49, MECHANICAL METALWORKING) (VOLUME 20 OF THE SERIES). n.d. 940p (Text in German) Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $5.00. PB 85053

1. Sheet metal - Manufacture - Patents - Germany 2. Pipe - Manufacture - Patents - Germany 3. Wire - Manufacture - Patents - Germany 4. Metal work - Patents - Germany.

PROCESSES FOR THE PRODUCTION OF SPECIAL TYPES OF ALUMINUM FORMATES. Steinkohlenbergwerk Rheinpreussen, Homberg, Ger. 1943-1944. 11f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101289

1. Aluminum formates - Patents - Germany 2. Patents - Germany St 63,731 IVd/12o May 23, 1944 3. Patents - Germany - St 63,754 IVd/12o Dec 29, 1943 4. Micro BIOS FD 1307/49, Frames 1-9.

Abstract available as PB 101289s. 2p. Mi $1.25, Ph $1.25.

Textiles and Textile Products

TEXTILINDUSTRIE. KLASSE 8,25,29,52,73,76,86,3, 41,44a,71,28,56,9. (ABSTRACTS OF GERMAN PATENT APPLICATIONS. TEXTILE INDUSTRY) (VOL. 13 OF THE SERIES). Auszüge Deutscher patent-anmeldungen n.d. 920p (Text in German) Mi $9.00, Ph $115.00. PB 99819

1. Textile machines - Patents - Germany 2. Patents - Bibliography - Germany.